



The
**World's Greatest
Building Paper**

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The
**World's Greatest
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American Carpenter and Builder

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In all cases in writing to advertisers say: "I saw your advertisement in the American Carpenter and Builder."

VOL. XV.

SEPTEMBER, 1913.

No. 6

DON'T be angry with the fellow who climbs the ladder of success just ahead of you. The ladder was there before either of you saw it.



A Side Light on Liability Laws

JUST how far we are progressing toward industrial justice—the disposition to see things from the "other fellow's" viewpoint—was indicated in what President Edward A. Hamar of the Northern Hemlock and Hardwood Manufacturers Association had to say at their recent semi-annual meeting, about the lumber producers' attitude toward the Employer's Liability Laws. He said:

"These Laws are an outgrowth of our former method of handling injured employees. It is not so many years ago that if an employee lost a finger or a hand at nine o'clock in the morning his pay ceased at that time. The employee, deeming himself mistreated, and rightfully so, sought redress through the lawyer. The lawyer recovered damages for his client through the Court, retaining half for his fees. The employer to protect himself took out liability insurance. The Liability Insurance companies to protect themselves and pay dividends to their stock-holders paid few claims without contesting. Still the lawyer had to be employed to recover damages for the injured employee.

"We now have Liability Laws good, bad and indifferent. The poor ones will eventually be amended and straightened out, so that the employer and employee will get a square deal and each will be satisfied. Working conditions will be better and the employee, knowing that he will be protected and taken care of in case of injury, will be better satisfied and will be a more competent workmen."



THE Prize Winners in the August Ad. Puzzle Prize Contest (page 53, Aug. AMERICAN CARPENTER AND BUILDER), will be announced in our October issue; since by mistake the Closing Date was given as "Sept. 15th" instead of Aug. 15th, as intended. This gives all fifteen days more on this interesting contest.



Be Accurate

Look closely to your measurements. Make sure you are correct.

It costs money to be wrong.

It may drive you out of business.

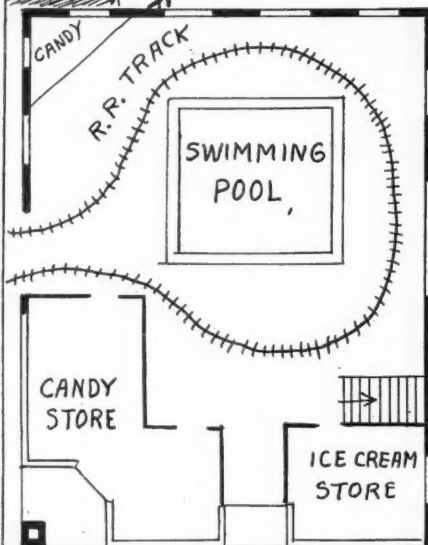
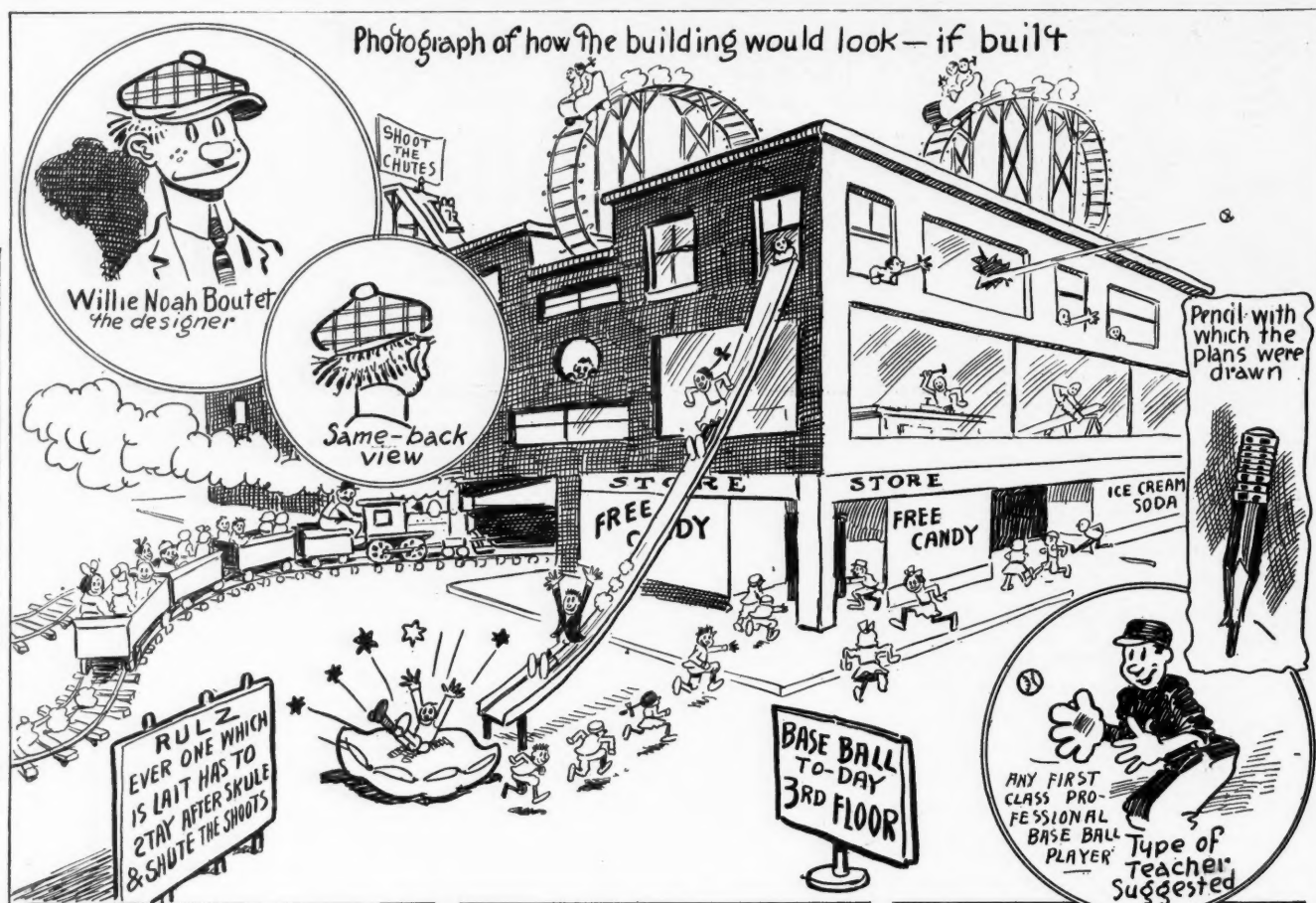
Don't guess; you are nearly always wrong.

Take time to measure your job correctly.

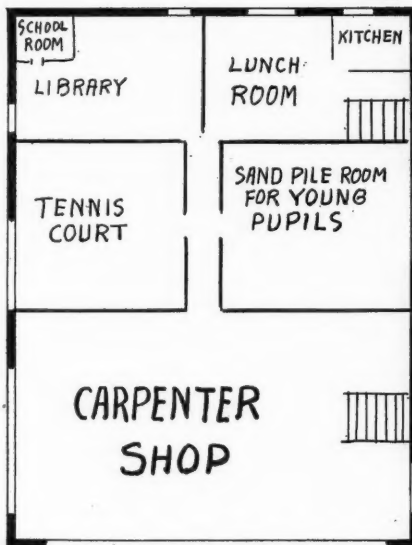
Better to lose a job than take it too cheap and lose money on it.

Let the other man lose the money if he wants to.

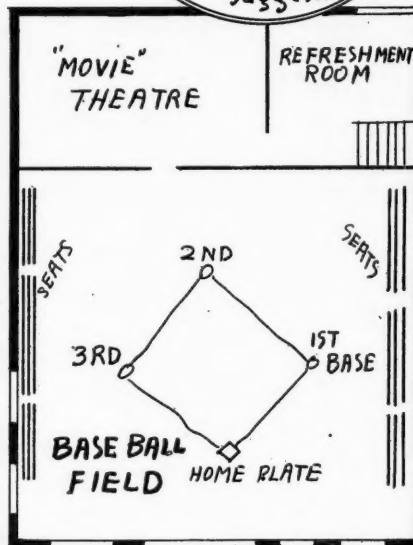
Proper measure and proper price is the business end of the building business.



FIRST FLOOR PLAN



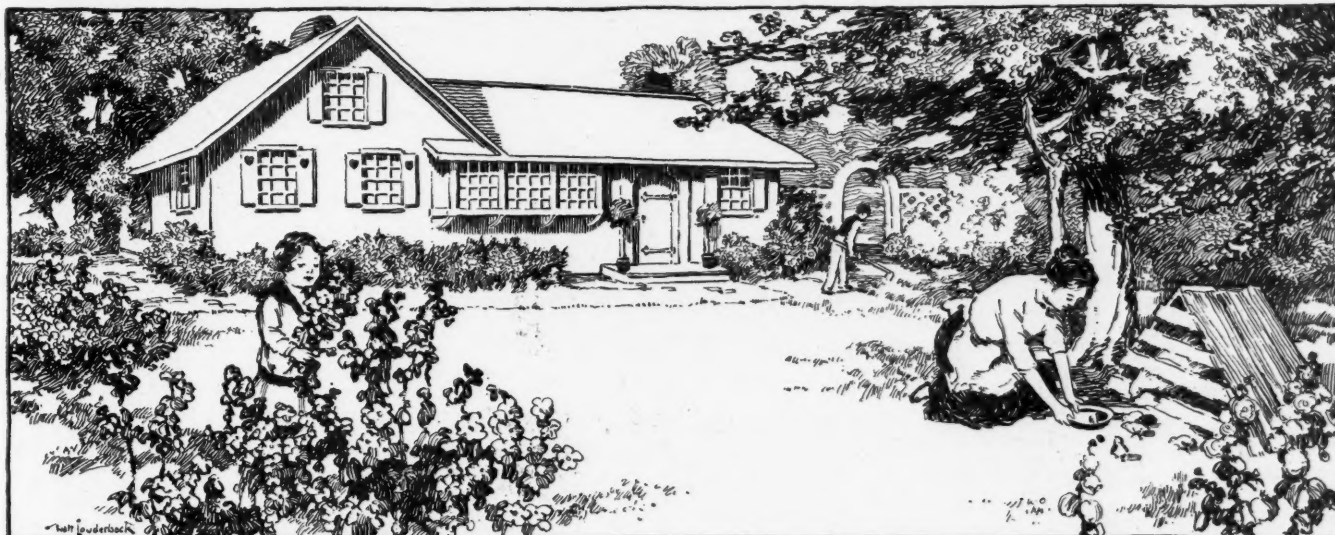
SECOND FLOOR PLAN



THIRD FLOOR PLAN



HOME BUILDERS SECTION



A Timely and Reliable Guide to All that is Practical, Satisfactory and Attractive in the Planning, Building, Finishing, and Furnishing of the Up-to-Date American Home

A Partnership for Satisfaction



Hail to the Carpenter

By J. F. Houchins, Holley, N. Y.

THE Village Carpenter is the acrobatic star performer in industrial vaudeville. After everybody else has failed to "fix it," drawn his pay and gone, the carpenter turns the trick for thirty cents. He mends your mantel, fixes your fireworks, patches your pump, and lifts your barn out of a manure pile and sets it on a stone wall.

He dusts your carpets, rigs your lights, and keeps the roof over your very head. He often eats cold lunch in your barn basement; then runs home in time for a late supper. He does any honorable old thing for any horny old price. You roast him in August and freeze him in February. You love him in overalls and scorn him in Scotch tweeds and broad cloth. You call him when he's out of town and cuss him 'cause he can't come. And yet he is endowed with such an inimitable blending of patience, good nature, and good sense that he will do it all over again for you as often as you think it necessary. He doffs his hat like a cavalier and in his hand clasp you feel the magnetic tingle of the Brotherhood of Man. Even the lowly Nazarene was a despised Village Carpenter.

A Story of Sinks and Backaches

Near the close of the year 1912, it was discovered for the first time why kitchen sinks are built so low that all women who wash dishes must suffer three backaches a day and nag their husbands to try boarding. The remedy was simple—raise the sinks. It was this way:

The housing reform movement gathered momentum and published reports and accomplished great things for some twenty years, under the direction of men and of women who had help in their kitchens. By that time, 1912, the men who had started it no longer made inspections (only speeches) and turned over the field work to women. One woman, Madge D. Headley, saw that the sink of the model tenement in the twentieth century is as low as the ancestral sink of the nineteenth, over which she had leaned and ached.

So Miss Headley went to a manufacturer of sinks.

"Why are sinks made so low that they give women backaches three times a day?" she asked him.

"I'm blessed if I know," he confessed.

Thereupon he set out to find the reason. Traced back to its beginning, the length of sink legs appears to have been set for a good reason and continued for none.

The old wooden sinks were built in the days when dishwashing and such tasks were done in wooden tubs and buckets with high sides, so that a low sink was comfortable to work over. Moreover, it was before the time of running water, the tubs and buckets were heavy, and the lower the sink the less the lift. When faucets and shallow

vessels came in, the sink still scrooched down by the floor.

By the time he had figured all this out, the sink man was so interested that he designed a new sink, a sort of sink on stilts, or a daddy-long-legs of a sink, and in no time at all now it will be on the market. All of which is to the everlasting credit of Miss Headley. —The Survey.

Home Keepers' Corner



—If the window sash are hard to raise pour a spoonful of melted lard between the sash and frame and on the sash cord.

—Finger marks on a white door may be removed by rubbing with a cloth dampened with water and dipped into whiting. Some use kerosene oil instead of whiting, but it is not so good as whiting and water.

—Clean a yellowed enameled bath tub with a cloth dipped in turpentine and salt. The tub should be dry, and after the solution has been applied it should be washed off with clear water.

—There are several good restorers for linoleum, and here is one: Take equal parts of raw linseed oil and vinegar and mix perfectly together by vigorous shaking.



The Dining Room Should be the Cheeriest Room in the House; it may also be one of the Most Attractive. This one is finished all in White to Contrast with Mahogany Furniture. The pair of China Cupboards by the Window are Novel; Leaded Glass Doors and Glass Knobs Make Them Extra Beautiful. Walls have low Wooden Wainscot. Note Indirect Lighting Fixture—it's the Latest Gasp

The Plan Shop

Practical House Designs "That are Different"

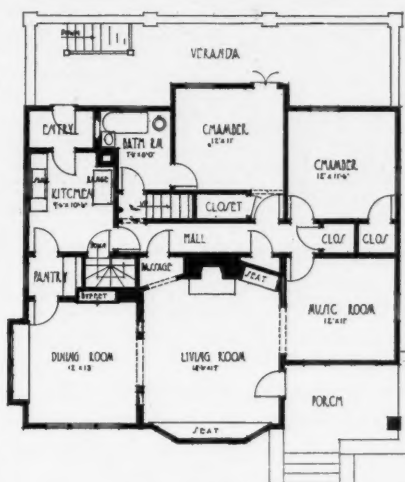


Four Low Cost Bungalows

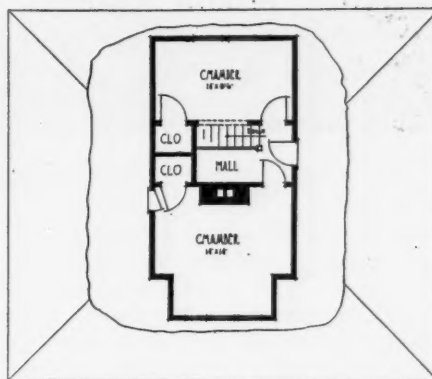
Photos and Plans of Some Interesting Residences That Have Pleased Without Bankrupting Their Owners

As everyone knows, it's an easy thing to design a big house where no limit is put on the cost. Most any architect can go ahead and produce a mansion in the form of a modernized English castle, or a French chateau, or a Colonial residence that will amaze the neighbors—and the expense will run anywhere from \$10,000 up to the blue sky for a top limit.

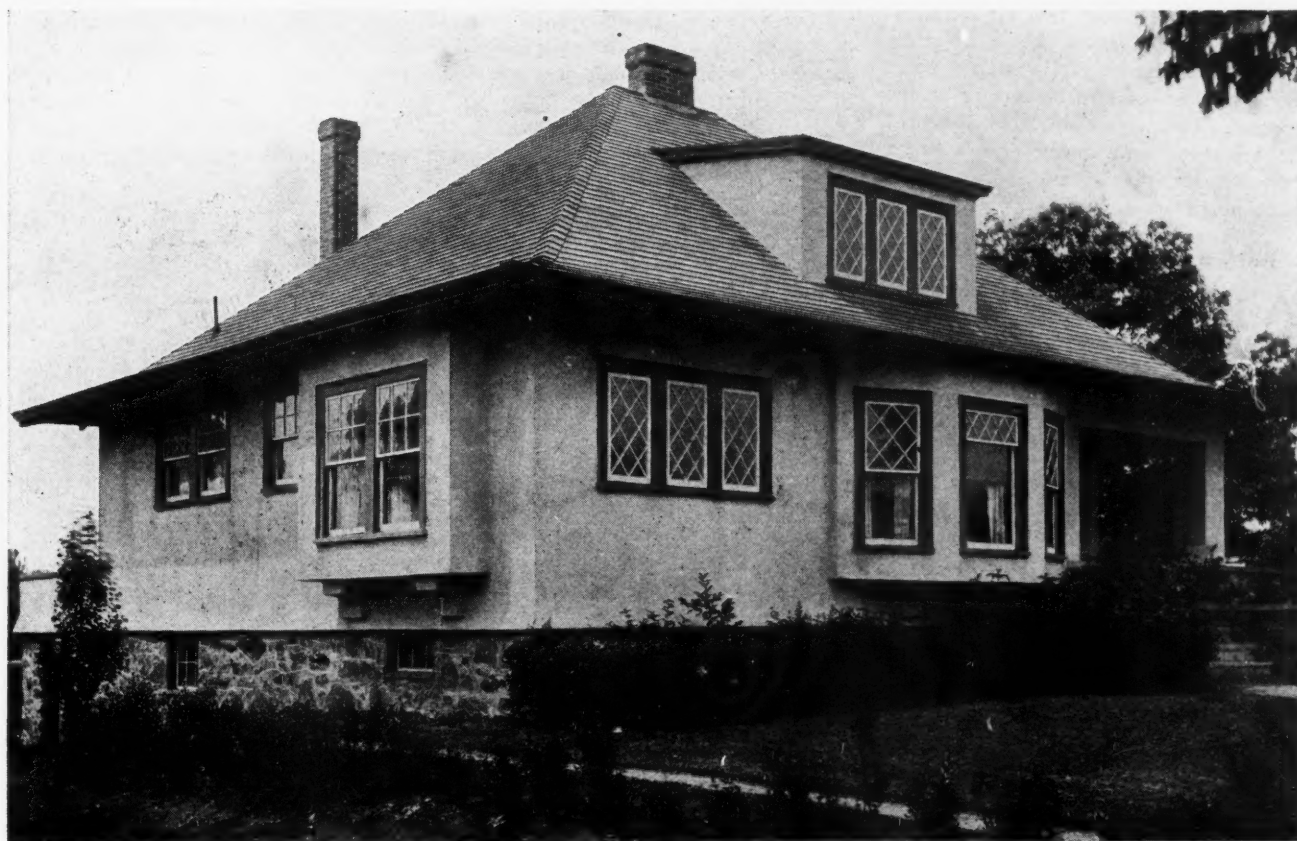
It isn't much of a trick to produce results when no limit is placed on size or expense, but to produce a well-designed, attractive home-like place that provides all modern conveniences and accommodations for the average family of four or five persons and still keep the cost within reach of the average pocket book,—that is an accomplishment.



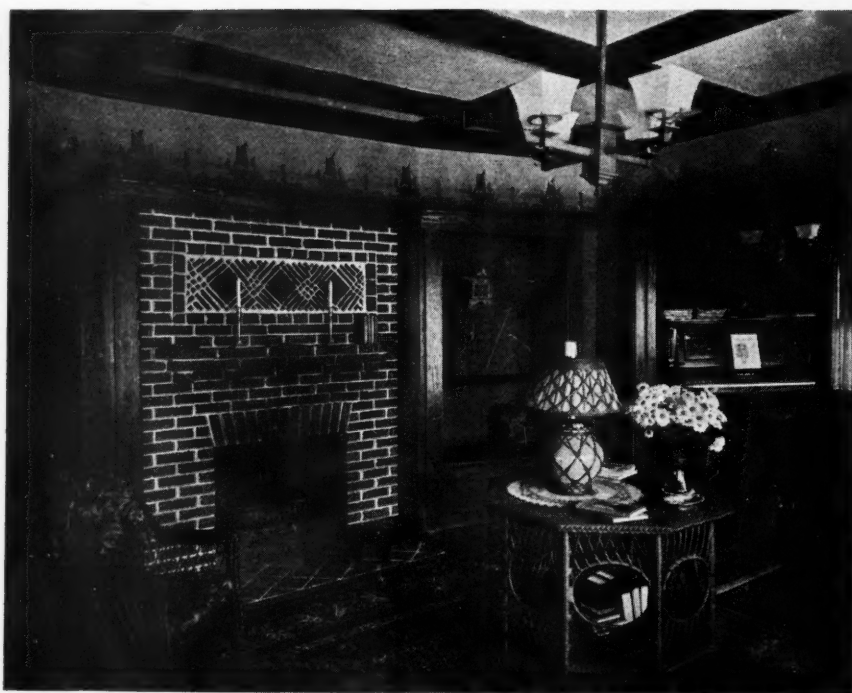
FIRST FLOOR PLAN



SECOND FLOOR PLAN



Exterior View and Floor plans of \$3,000 Eight-Room Bungalow of Mr. Arthur S. Roe, at Beech Bluff, Mass.



Living Room looking toward Music Room in Roe Bungalow at Beech Bluff, Mass.

America is becoming noted for the charm and completeness of her small residences. The numerous bungalow designs which dot our suburbs and towns lend variety to the general scene. Numerous architects have made special study of small house designing and they deserve much credit. They have made it possible for a home builder today to invest from two to five thousand dollars in a new home of really distinctive design. Well-designed small houses never come to be a drug on the market. They are readily sold or rented at any time and always command a better price than their more plainly built neighbors.

Bungalow at Beech Bluff, Mass.

AN interesting eight-room story-and-a-half bungalow that cost \$3,000 is illustrated. This is the home of Mr. Arthur S. Roe at Beech Bluff, Mass.,—a cement-plastered, square, hip-roofed little dwelling, designed by Fritz C. Bickford, architect, of Boston.

A glance at the floor plans will show the main floor divided almost in half so that the entire front is given over to the three connecting rooms—living room, dining room and music room or den. The rear half provides two good-sized bedrooms with an extra generous amount of closet space, bath room, kitchen and back vestibule. By this arrangement the service portion of the house and the sleeping rooms are both quiet and private, and at the same time are easily accessible from the front of the house.

The stairway to the second floor goes

up from the hall immediately off the living room. On the second floor are two large bedrooms with plenty of windows to make these rooms as cool and airy as possible.

The living room, now universally recognized as the most important part of any dwelling, has been made most attractive in this bungalow. It has a big fire-place with an ornamental mantel of rough texture brick and chimney corner built-in seat occupying one end of the room. Across the other end,

in the wide bay window, is a built-in lounge or window seat. This room has a beam ceiling, woodwork finished in old oak and walls covered with dull green paper with landscape frieze above the cap rail depicting a typical Cape Cod scene.

There is a very stylish square colonnade opening between the living room and dining room. The dining room has a built-in buffet and bay window seat. This room is finished in brown and features a landscape wall paper frieze showing a Dutch sunset, worked out in well-blended colors of blue, green, pink and brown.

For anyone having a large lot, this design is thoroughly desirable. As the width is about 42 feet, it should not be cramped into narrow quarters. A well-kept lawn with plenty of shrubs and flowers, and a tree or two, give this house, or any bungalow design, its real attractiveness.

7-Room Minnesota Home

A MODERN house of very moderate expense, total cost being only \$2,800, that has attracted much favorable comment, is the home of Mr. Chris Erickson at Mabel, Minn. It was designed by a local architect and builder, Mr. D. A. Haines.

This house is 32 feet wide by 37 feet long. The interior arrangement is very interesting. A glance at the floor plans will show a central entrance and vestibule. From the front porch this vestibule opens to the living room, an apartment 12 feet by 18 feet 8 inches, and with a large bay window nook which



Dining Room in Roe Bungalow Showing Square Colonnade and Neat Built-in Side Board

adds about 8 by 12 feet to this. To the left through a broad cased opening, is the dining room.

The stairway deserves special notice. It is quite unique in its arrangement. Two steps laid out in a curve go up from the inside corner of the living room through a door, to a triangular landing. The back stairway, opening

shingled with red cedar shingles 5 to 2. The porch floors are cypress. For the inside finish, quartered white oak is used for floors and trim for living room, dining room, first floor bedroom and second floor hall. Balance of the second floor has yellow pine flooring and birch trim; kitchen and pantry, maple flooring and yellow pine trim. The

dwelling at low cost, this design is hard to beat.

Bungalow at Hamilton, Mass.

ANOTHER Eastern bungalow is the home of Mr. J. W. Buhlert at Hamilton, Mass., designed by Henry W. Roe, architect, of Boston. The exterior is a combination of weather stained shingles and gray stucco.

The photograph was taken from the rear of the house and shows one of the most interesting features—the sun room which opens off the living room. Entrance to the house is through a simple Colonial porch directly into the large living room. This occupies all of the one-story section. It has a high ceiling going right to the rafters. Windows are on all three sides and the big brick fire-place occupies the fourth side. This room is both living room and dining room and is a great joy to the owners and their friends because of its hospitable and comfortable atmosphere. This room is finished with matched cypress stained brown. The floor is stained maple. Built-in seats with lockers underneath, extend along one side and out by the doorway partially screening the interior when the entrance door is opened.

Back of the living room is a small hallway from which the stairs ascend to the two pleasant bedrooms, which with the bath room, occupy the second floor. The down-stairs bed room opens from this hall also.



Seven Room Country Home at Mabel, Minn., Designed and Built by D. A. Haines for \$2,800

from the pantry between dining room and kitchen, joins this landing and the remainder of the stair is a straight enclosed run to the second floor.

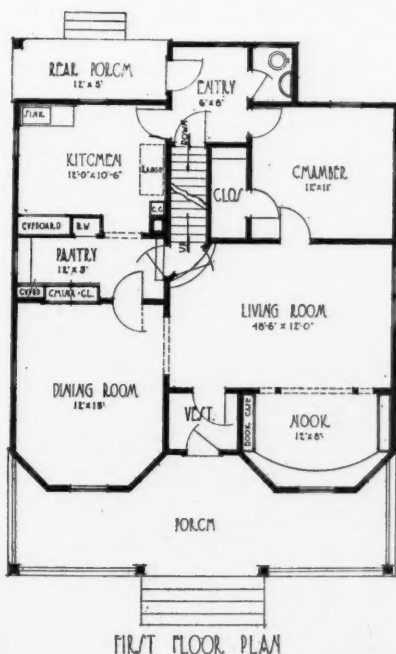
Other features to be noted in this set of plans is the downstairs bedroom with extra large clothes closet, back entry off the kitchen porch, the toilet facilities in kitchen and pantry from the cellar, clothes chute from second floor bath room to laundry in the basement, three large bedrooms on the second floor all opening to the central hall and also connecting each with the next. An extra large amount of closet and storage space is worked in under the roof.

The specifications for this neat little residence called for 12-inch foundation walls up to grade line of concrete 1:6 mixture, laid on 6x24 inch footings, of the same material. Above grade, hollow cement rock-faced blocks were used. The entire basement floor to be cemented with two inches 1:6 concrete, with a half inch top coat of 1:2 cement mortar. The basement is divided into laundry, preserve cellar, vegetable cellar, boiler room and coal bin. The laundry is equipped with stone laundry tubs and the preserve cellar has full supply of shelves, coal bin equipped with iron coal chute. In the furnace room is located the hot water boiler for heating the building.

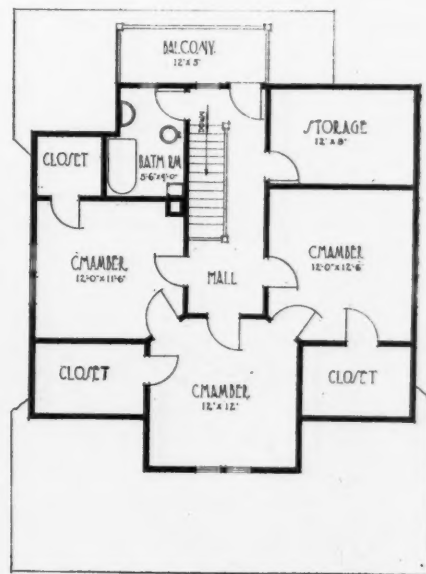
The outside walls are frame construction, dimension stuff being all number one white pine. First story is sided with 6-inch red cedar siding, gables and roof

house is lined throughout with heavy tarred paper.

The dumb waiter extends from the pantry down 5 ft. below the basement floor and is bricked up from bottom to the first floor joist and plastered in-



FIRST FLOOR PLAN



SECOND FLOOR PLAN

Interior Arrangement of Convenient House at Mabel, Minn.

side. Carriage is operated by a crank in the pantry. This space is always as cold as an ice box.

Lighting throughout is by electric lights, every light controlled by a convenient wall switch.

For a really modern, medium-sized

The kitchen opens from the living room just at the right of the fire-place. The space in this corner of the structure is utilized to the very best advantage being given over to a nicely laid out kitchen with pantry and maid's room and lavatory.



Interior of Big Living Room Wing in Buhlert Bungalow

There is a cellar underneath the entire house containing the laundry and heating plant. The house is heated by steam and lighted by electricity. The entire cost of construction, using the very best of materials, was \$4500. This cost in many localities and using satisfactory materials, could easily be cut to \$2500.

6-Room Cottage at Roodhouse, Ill.

A VERY practical home design has been worked out by Mr. Harry Rawlins of the contracting firm Heaton & Rawlins, Roodhouse, Ill., in the home of Mr. J. S. Triplett. This house cost complete, according to the contractor's statement, \$2,950.

A wide porch with brick foundation and pillars extends half way across the front and down the side. Entrance is direct into a square parlor or front room which opens through a 6 by 8 ft. colonnade into the sitting room. The dining room is immediately back of this, in the rear corner of the plan. The kitchen, pantry and bath are conveniently located in the other corner at the rear. Two good-sized bedrooms are provided, one opening from the par-

lor, the other from the sitting room.

All of the exterior finish lumber for this house is clear cypress. The interior trim is of clear yellow pine, except the doors which are veneered birch. The flooring throughout is $\frac{7}{8} \times 2\frac{1}{4}$ -inch oak.

All modern conveniences have been provided, including electric lights, pneumatic water supply system, complete bath room equipment and kitchen plumbing

fixtures. There is a good warm air furnace, well installed, and is located in the basement. The basement also provides a well-equipped laundry with set tubs and heater.

This is the sensible sort of house plan which a great many people prefer to any other. It has been often tried and there is no doubt that it meets the needs of a great many families.

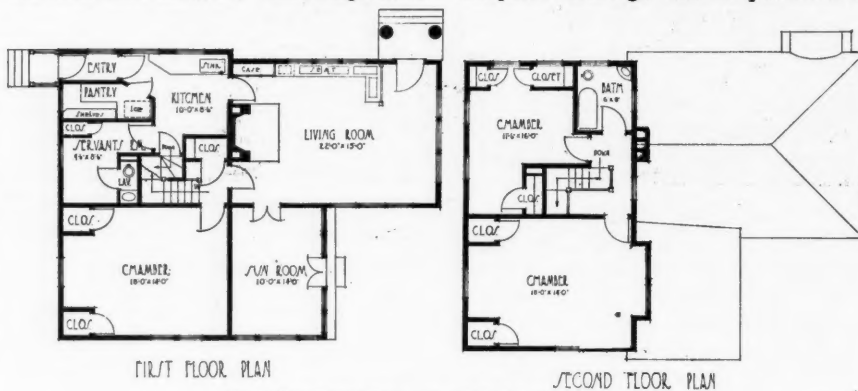
The Why and How of Ventilation

By Harold L. Alt, M. E.

IT is not the intention in these remarks to furnish information or instruction to the heating and ventilating engineer, but rather to explain, in simple language and in such a manner as to be clearly comprehended by everyone, the principles and theory of ventilation.

A man should always be familiar with his tools and material; the composition

gen (which are present in nearly the proportion of one part of oxygen and four parts of nitrogen by weight), and carbonic acid gas in the proportion of three to five parts in ten thousand in the air of the open country. These three elements combined with water in the form of vapor make up the normal atmosphere although minute quantities of



Interior Arrangement of Buhlert Bungalow

of the air must, therefore, be known and appreciated, since air is the medium by which ventilation is accomplished.

Air is a mechanical mixture, composed of many elements, but its main constituents are principally oxygen and nitro-

gen. Other compounds together with organic and inorganic matter and local impurities are usually included in the mixture.

Nitrogen is an inert element in all the processes of either combustion or respiration, and acts so as to dilute the oxygen in the air to a point suitable



The Feature of the J. W. Buhlert Bungalow at Hamilton, Mass., is the Big Living Room Wing, Windows on Three Sides and with Roof for a Ceiling—Note also Glazed and Screened Porch

for human use; in fact, pure oxygen, alone, is too strong to be taken into the normal lungs. The carbonic acid gas is another inert constituent somewhat similar to nitrogen and, in the modern conception, is regarded as not very dangerous and hardly disagreeable unless present in the air in such large quantities as to interfere with the readiness with which the carbon of the blood unites with the oxygen in the atmosphere. The real harm of a vitiated atmosphere is due to the presence of gases and minute

and crevices in the construction, and is usually quite sufficient in all dwelling houses and other structures in which people do *not* assemble in closely crowded bodies. This is especially true if the natural leakage is farther assisted by the use of a warm air furnace which will supply quite a large quantity of fresh, warmed air during winter months when it is in operation.

Natural ventilation can be increased (when the natural leakage is insufficient) by the installation of window

atres, churches and auditoriums, the natural leakage is not only usually insufficient, but often comes very far from supplying proper amount of air, and in these cases the most satisfactory solution is in the mechanical method of forcing in large quantities of air (warmed to whatever degree may be considered desirable) and based upon the *number* of occupants somewhat as follows:—

For Hospitals, 5,000 to 6,000 cubic feet per hour.

For Schools, 2,500 to 3,000 cubic feet



Practical, Popular Style 6-Room Cottage at Roodhouse, Ill. Cost \$2,950

organisms which are produced by the process of breathing and thrown off from the body with each expiration. Careful tests have shown that these really harmful elements are present in *nearly the same proportion* as the carbonic acid gas so that a measure of the carbonic acid gas (which is comparatively easy to obtain) is at the same time a reasonable measure of the amount of harmful matter in the air, and by limiting the amount of carbonic acid gas in the air, it is possible also to limit the amount of other impurities at the same time.

Ventilation for our purpose consists primarily of keeping the air of any apartment or building in a sufficiently pure state to prevent bad effects upon the occupants and in the introduction of the pure air for this purpose in such a manner as not to cause inconvenience or endanger the health of the occupants.

Now there are two methods in use for transposing the purer outside air into a building where the atmosphere is rapidly becoming vitiated;—one known as "natural ventilation" and the other as "mechanical ventilation."

Natural ventilation is caused by the air entering the room through leaks



Interior of Roodhouse Cottage

ventilators, or other similar contrivances, whose fundamental idea is to permit an inflow of fresh air without causing a draft; this, however, is liable to be unsatisfactory since most of the air currents from natural sources are not heated and consequently tend to drop toward the floor (especially in the vicinity of their origin) rendering the temperature of the room variable and liable to cause discomfort.

In buildings where persons are assembled together such as schools, the-

per hour.

For Theatres and Halls, about 1,500 cubic feet per hour.

For Churches about 1,200 cubic feet per hour.

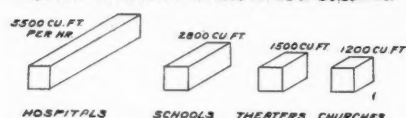
These are the amounts which have been found in practice to give fairly satisfactory results taking into consideration the length of time the building is occupied, and the character of its use. It can readily be understood that the introduction of 3,000 cubic feet an hour per person into a room occupied say by 50 people means 300,000 cubic feet of air delivered into the room every hour. Now the construction would indeed be poor which would allow the free escape of this air with only the normal leakage around the sash and doors. In order to permit the introduction of such a volume of air into a room some method must be provided whereby the stale air which does not find its way out through natural leakage will be taken care of. This is usually accomplished by exhaust outlets or vents, the simplest form consisting of a hole in the roof capped, either by a cupola with louvres, or one of the many standard ventilators in the market.

This method of taking care of the stale air is not only uneconomical, but

is unsatisfactory in its results. Its lack of economy consists in the ventilator taking the air from the top of the room (which is naturally the hottest air in it) leaving the cooler air near the bottom in more or less of a stagnant state; this is liable to result in the lower air becoming vitiated beyond the proper limit.

The normal circulation of air, especially when inserted into a room in large volumes and at a higher temperature

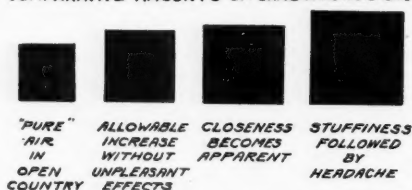
GRAPHIC COMPARISON OF AMOUNTS OF FRESH AIR REQUIRED PER PERSON IN VARIOUS TYPES OF BUILDINGS.



than 70 degrees, is for the air to follow its natural inclination and rise first to the higher portions of the room. As it gradually becomes cooled it tends to sink toward the floor and this is why many persons advocate the placing of the vent outlets, *not* at the ceiling, but at the floor.

A great deal of opposition to this has always been manifested by many

COMPARATIVE AMOUNTS OF CARBONIC ACID GAS



people who have not made careful study of the subject, the opposition being based upon the well-known operation of a hot air furnace whose inlets to a room are very nearly always at or near the floor, the air finding its way out around the windows above the floor, as high up as the sash extends. In this case, however, the ventilation resulting is not attained by *intent* but is only the *indirect outcome* of the endeavor to *heat* the house. This may be seen by the fact that when steam or hot water heating is substituted for the furnace, thought is seldom given to providing any sort of ventilation, whatsoever.

A further discussion of this important subject will appear next issue, questions and comments from our readers are invited.—Editor.

Decorating the Home



A Modern Paneled Decoration

Allover Stenciling Effects

A VERY interesting scheme for a paneled wall decoration suitable for use in a dining room, hall or reception room is presented in this month's *Painters Magazine*. It is by our old friend, E. H. Brown, who makes some helpful comments on it.

In the more formal apartments, combinations of deeper or richer colors would naturally be selected; while for a boudoir or similar apartment, the color selection would be lighter and gayer in tone.

The lower part of the wall is divided into a series of long, narrow panels, enclosed in narrow mouldings, or if it be preferred to omit wooden stiles and rails, they may be simply outlined with a half-inch band of color. These panels are stenciled with a clothy pattern—or perhaps it would be more accurate to term it a diaper. The stenciling may be either lighter or darker than the background color, the effect produced varying very much according to the treatment in this respect.

Ornament stenciled in white or ivory on a yellow ground would be very attractive in a boudoir or a reception room. On the other hand, in a dining room or hall, one would naturally stencil the ornament in a darker tone of the background color, which might be in shades of green, red or warm, rich brown.

Another treatment very suitable for a boudoir or reception room, would be to blend the background from one color to another, diagonally across the panel from the upper left-hand corner to the lower right-hand corner. Beginning at the top with a rose pink, for example, the ground may blend gradually to a green, having about the same depth of color tone. The stenciling should just reverse this, the ornament being green in the upper left-hand corner and shading to rose pink at the lower right-hand corner. The effect produced will resemble a silk or satin fabric, and if glaze colors are used for the stenciling,

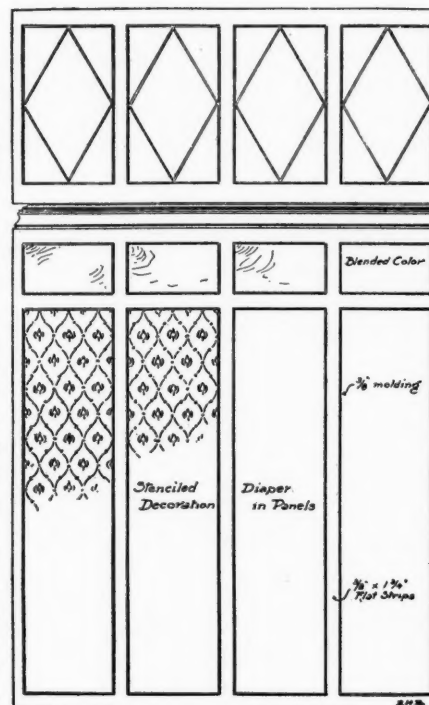
it will be even more pronounced. Of course, in the center of the panel, the ornamental design will fade almost into nothing, although just enough color distinction should be left that the eye will carry the pattern through the entire panel.

It requires skillful handling to produce an effect of this kind and the decorator should practice it at his shop before attempting it on actual work.

Above these diaper pattern panels the design calls for a series of small flat panels, using the same moulding as before, and employing the back ground color as a plain tint, or perhaps blended with a clouded glaze effect.

Above a shelf moulding, which may be wide or narrow depending upon the use of the room, the wall is painted a light tint, which must be selected carefully with reference to the general color scheme, and this is divided into panels, with diamond-shaped centers by means of lines or bands of color, perhaps three-eighths of an inch wide. These should be run either in a lighter color than the ground in white or a contrasting color of the same depth of tone as the ground, or they may be gilded. The idea is to keep the effect of this frieze very delicate, so that the panels are not obtrusive. With a proper selection of colors the whole effect of this decorative scheme is very artistic, while it is by no means difficult of execution.

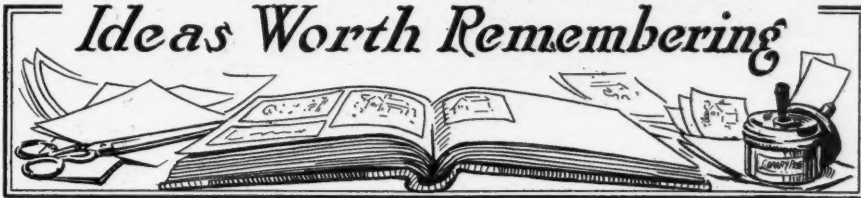
—To stop a door hinge from creaking give it a drop of oil or a little stove polish, or rub with a lead pencil.



Neat Decorative Treatment for Dining Room, Hall or Den

The Home Builders' Scrapbook

Ideas Worth Remembering



"Anywhere" Sash Stop

By Chelsea Curtis Fraser

The "Anywhere" Sash Stop is all its name implies. It stops a sash anywhere within its upward or downward range. And what is more it holds it—holds it so securely that it will never drop; for the more pressure exerted on the sash the tighter the stop sets against it.

I have found this Stop the best thing I can get for my own small windows, as most of the "store" stops hold the window only at certain places, and every one knows the advantage of being able to put a window just exactly as high as you want it on a cold or windy day, and no higher or lower.

The Stop is made out of soft wood, preferably pine, willow, or basswood. It should be whittled or shaped from a block about $2\frac{1}{2}$ in. long and $\frac{3}{8}$ in. thick. The shape is shown in Fig. 1, and is not particular except that the big end should be smooth and rounding on its edge and of a circular shape. A little below the center of this round part, make a hole through the block a trifle larger than the screw with which you fasten it to the stop strips of the window frame. The stop should be made smooth by scraping or sandpapering.

If desired, a finish may now be applied to the Stop by staining it with a dye to match the woodwork of the window, or it may be blackened with ink, and burnished with a knife handle when dry.

Hold the handle down close to the

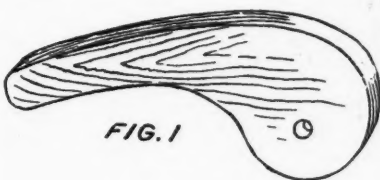


FIG. 1



FIG. 2

The "Anywhere" Sash Stop

window sash, and the rounded part of the stop, where it comes closest to the screwhole, almost against the sash; turn in the screw at a point a few inches below the top of the lower sash. Drive it in until the head begins to bind slightly on the stop; then it is done and ready for operation.

When not in use, keep the handle of the stop turned down. But if the window is to be raised, lift it to the desired elevation, then pull upward on the handle till the head engages the sash firmly. There that window will surely stay.

Repainting Canvas Covered Walls

Rooms that have been finished with canvas or muslin paper, in time need refinishing; and it is often suggested to paint or calcimine right over the cloth.

If the old wall covering shows a tendency to let loose, it should be removed. Placing a fresh coat of paint on such material will only tend to help loosen it and pull it away from the wall. If however, the old covering is secure, it may be painted with lead and oil or a cold water paint, just the same as a plaster wall.

Warding off the Fire Fiend



Safeguarding Heating Pipes

Fourth Paper in a Series Dealing with Simple Fireproofing Precautions Recommended by the Underwriters

EVEN the comparatively low heat of hot air ducts, steam and hot water pipes is unsafe to trust without special safeguards. It is a generally accepted fact that wood charred very slowly ignites below the temperature required for ordinary charcoal.

A hot-air pipe can get too hot to touch comfortably; it must always be of metal. It is recommended not to place these inside of wood partitions at points nearer than 8 feet from the furnace, to

allow 6 inches between bare woodwork and the pipes, and in partitions or closets to enclose each in a tin pipe at least one inch larger than itself or to protect the nearest wood with a tin shield set out from the wood $1\frac{1}{2}$ inches and $\frac{1}{2}$ inch from the pipe. Or the pipe can be encased in metal lath, plastered, provided there is $\frac{7}{8}$ of an inch of plaster outside the metal lath. On horizontal pipes, a clearance of 3 inches between wood and the protecting covering is recommended.

Steam and hot water pipes should be 2 inches from bare woodwork, or 1 inch from that with a metal shield, and be centered in a metal tube of 1 inch larger diameter where passing floors or partitions with a cap at the floor. Indirect radiator boxes or similar casings should be lined. To economize heat, steam and hot water pipes are frequently covered, but it is dangerous to apply a covering which can burn, and some of the trade articles have in the past been found to possess that danger. For economical reasons it is well to select one which is as little subject to disintegration from steam or water leakage as possible.

A register in the floor to heat one room from another below is an opening which directly violates the principle of preventing the upward passage of fire, and is therefore objectionable.



Why not Build Instead?

"I hope you don't object to my children practicing their music lessons," said the fourth floor tenant to his neighbor below stairs. "On the contrary," said the neighbor. "It has given me a firstclass reason for demanding a reduction in my rent."—Harper's Weekly.

Modern Conveniences

The Record-Herald relates that a Chicagoan who employs a Swedish maid overheard the following conversation the other day between her cook and the maid next door, also a Swede:

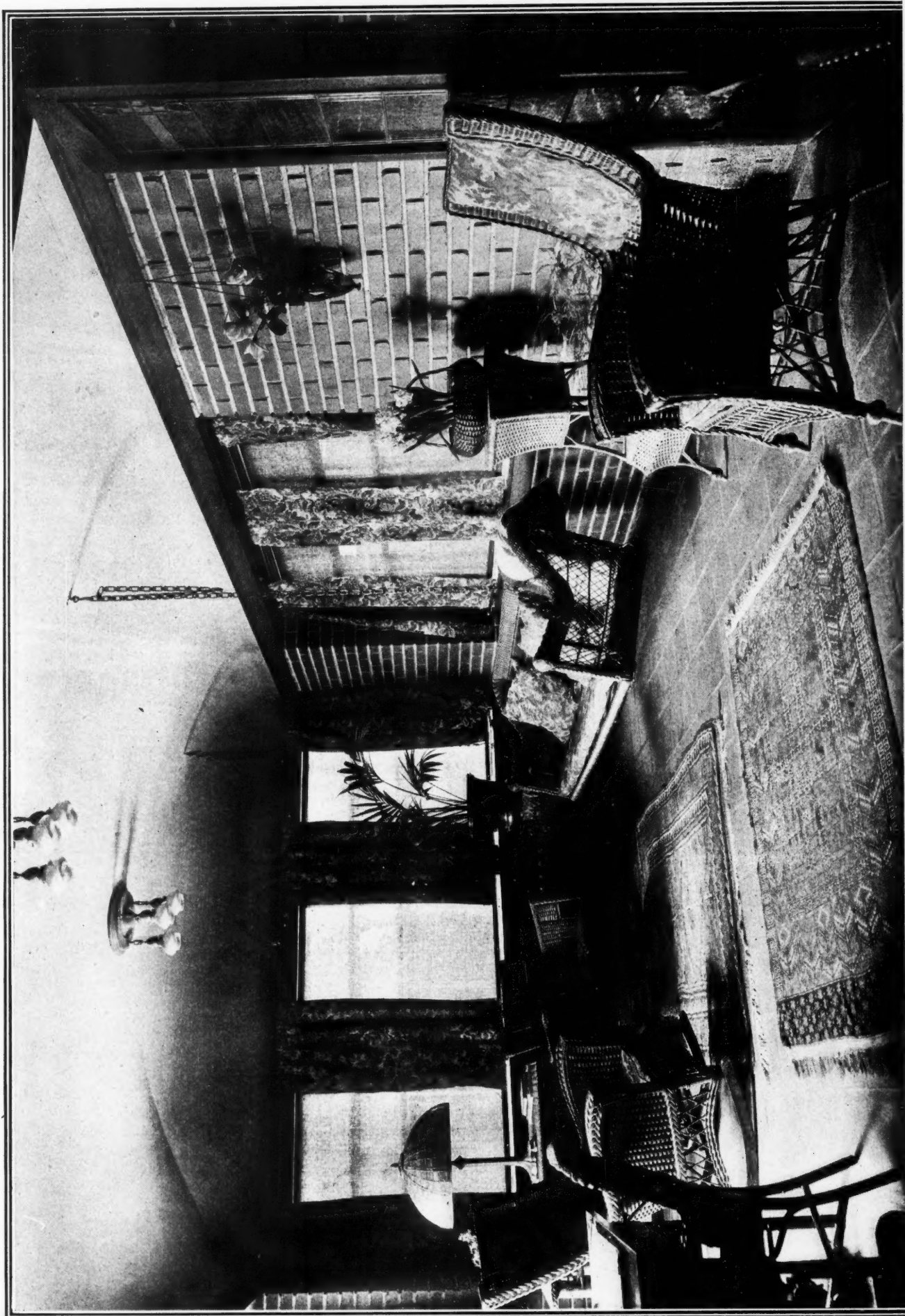
"How are you, Hilda?"

"I well: I like my yob. We got cremated cellar, cemetery plumbing, elastic lights—and a hoosit."

"What's a 'hoosit,' Hilda?"

"Oh, a bell rings. You put a thing to your ear and say, 'Hello,' and someone says 'Hello,' an' you say 'hoosit.'"

HOME BUILDERS SECTION



A Modern Out Door Living Room—Cheerful, Airy, Sanitary. Floor is of Square Red Tiles, Laid with Wide Joints; Walls are Brick; Only Wood Used is Broad Picture Mould and Window Sash;—the Whole Place can be Flushed Out with the Hose Without Fear of Damage. Outside Walls are Frantically all Windows; Hangings are Brightly Figured Chintz. Ceiling is Arched

Verandas, Sun Parlors and Sleeping Porches

By Mary H. Northend

Photographs by E. J. Hall and the Author

IN these days of out of door living, everyone should have his own veranda or porch, if it is nothing more than a narrow flooring let into a jut in the house. In fact, there are very few houses at the present day that are not finished with an adjunct such as this. The twentieth century brings with it an ever increasing desire for life in the open. This fact has awakened the attention of the architect, and often obliged him to tax his ingenuity to the utmost to introduce new veranada effects.

In every home there is some place where a veranda can effectively be introduced. It can rest on the ground or it can be raised to meet the level of the first story floor, so that one can walk from the open window onto the veranda itself. If it is raised, it can be supported by posts, preferably of cedar or locust, which have good lasting qualities. Or it can have a stone wall upon which to rest. If of wood, it can be latticed in and painted to match either the body or the trim of the house. In that case it is well to plant woodbine, clematis, or some other climbing vine to give it a more picturesque effect.

The most useful veranda is situated, not on the front of the house where privacy is difficult to secure, but on one side or at the rear. French windows opening from the living room or hall

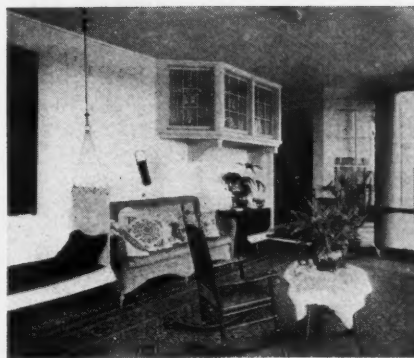
make an excellent means of entrance from house to veranada. If the latter is to be screened in, it is not a good plan to have steps leading from the veranda to the ground, it being more practical to have a porch entirely private, entered only from the house. Verandas of this sort should be wide enough to admit of a row of chairs and plenty of space for passage in front,—say 10 feet as a minimum extreme width, though 12 feet is much better. Many verandas of this type are screened in summer and



This Living Porch has Lattice Covered Walls and Ceiling

glazed in winter, sometimes, even, radiators being installed so that the porch can be used all winter as a "sun room."

Porches other than the main veranda can be much smaller, and they may be roofed or left open like a terrace. Some-



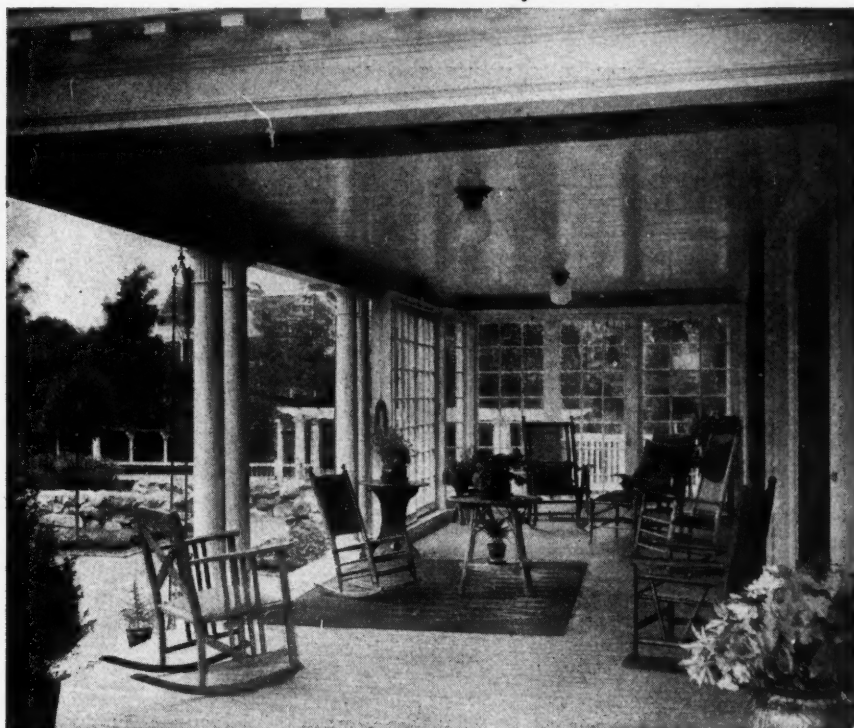
A Corner of a Big Porch Screened off and Furnished

where outside the house it is a good plan to have an open terrace on which one may step from the house, for on fine nights in summer it is delightful to sit out of doors directly under the sky. An additional advantage of the veranda is that it shuts no light from the living rooms.

The sleeping porch has become a necessary part of the house. Frequently, it is located on top of the principal veranda, thus being, in fact, the second story of a "double-decked" porch. When this is the case, it is best to extend the main roof of the house right out over the sleeping porch wing, otherwise the double-decked porch might look detached. The minimum width of a sleeping porch is 7 feet, but 8 feet is better, its size of course, being determined by the number of persons who are to sleep there.

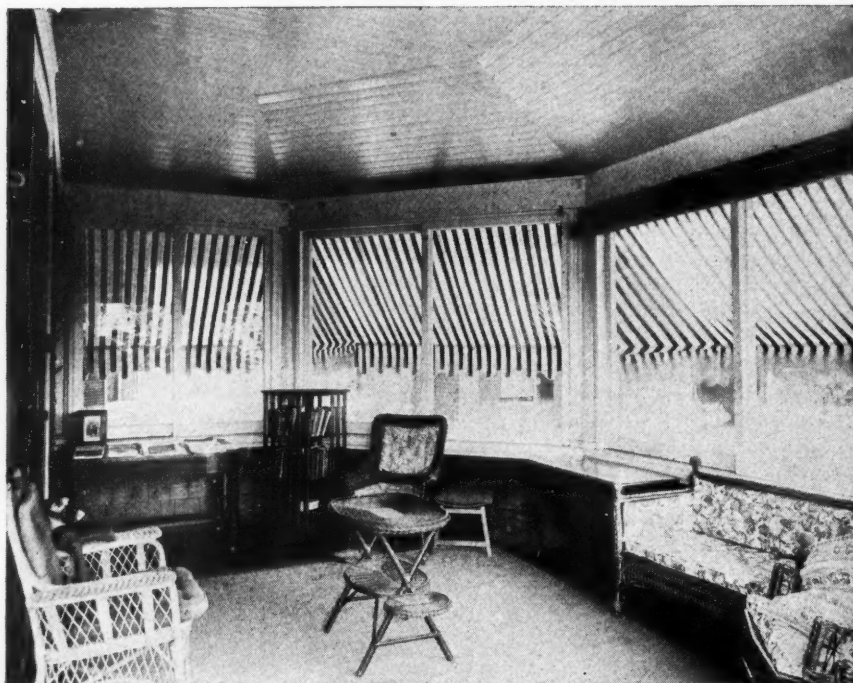
Cot beds are used mostly, though folding beds are particularly desirable, as they may be closed up out of the way in daytime. Folding beds for this purpose are built into the wall, with ventilators provided at the sides. If windows are to be used in connection with the sleeping porch, casement windows will be found to be best,—in groups hinged at the sides and opening out. Thus, the maximum of air is secured when windows are opened, and the purpose of the sleeping porch is not diverted. In some porches double doors (French windows) open from the principal bedroom, through which an ordinary double bed can be pushed. In this way it is possible to keep the bed in the bedroom during the day, pushing it out on the porch at night.

The sun room may be treated as a sort of glazed-in veranda, or it can be built like any other room, adding plenty of windows opening down to the floor. A sun room is very attractive and will be found quite useful located where one can step directly into it from the living room. It is frequently the custom to open a conservatory off one end of the sun room, and often the sun room floor is a step or two down from the living room floor. Tile floors are excel-



One End of this Porch is Glazed and Screened, Making a Very Comfortable Corner in Any Weather

HOME BUILDERS SECTION



Awnings Keep Even a Sunnyside Porch Cool, Private and Inviting. This one is the most used part of the house

lent for porches and sun rooms,—especially red quarry tile laid with wide black joints. Tile should be oiled after it is laid, to bring out the color.

The most satisfactory wood floor is a white pine or cypress. If a hard wood floor is wanted, maple is the best. It has a fine even grain, is very hard, and particularly adapted for this purpose.

In putting down the floor, one must do one of two things, either leave it with small cracks between the boards, or give it a slant, so that the water will run off in case of rain, for if rain stands on the floor, it will rot it.

There should be just as much taste put into the furnishing of a veranda as into furnishing a living room. The floor can be covered with a matting or grass cloth, but do not cover it entirely on account of the danger of its rotting. Crex rugs are very serviceable, as is also the summer linen rug, for linen is one of the strongest fibres, and withstands wear, age, and abuse. These rugs come in all sorts of colors, are reversible, and can be easily washed. Japanese rugs are also washable. They are cool and attractive for summer use. The reeds and rushes for making these rugs come in brown and green. If carried in every night, they last for years.

The popular furniture to-day is willow. It can be purchased in almost any color with a reasonable range in price. It has the advantage of being easily moved besides being attractive. The pieces come from \$3.00 up. There are comfortable rockers of closely woven willow for \$9.00; others can be purchased for \$7.50; while the Bar Harbor

chair sells for \$6.25, complete with cushions for back and seat made of pretty figured cretonne. There comes especially for porch use a unique chair with high seat and adjustable back that can drop down to form a table for informal luncheons. It can also do duty as a smoking table, writing table, or sewing table. Many people have their furniture made to order. This is very expensive, especially in these days when so many varieties are easily obtained.

No veranda is perfect without a hammock. It can be bought at almost any

price, and of almost any material ranging from twine to canvas. The Gloucester hammocks, with high back, and wide cushioned seat, are most popular to-day.

Sliding Doors Useful

Please tell me what do you think the most suitable treatment for an opening between the living room and the dining room—sliding doors or a cased opening? Mr. J. G. D.

Personally we prefer the sliding doors. For various reasons it is often necessary to close the opening, and portieres are not always sufficient to guarantee privacy. With the modern door hanging arrangements, sliding doors work easily and have ceased to be the annoyances they once were.

Painting Concrete

What is the best method of treating concrete porch columns and cement blocks, preparatory to painting them?

If the concrete is new, wash it with a zinc sulphate solution or with carbonic acid water, such as you get from the soda fountain. When you come to applying the priming coat our preference would be white lead and red lead, if you are particularly desirous of making a durable and permanent job of it. There is, however, the difficulty that this would make the priming coat more or less red, and it would require at least two coats of white lead straight over it to come back to the white color.

When painting the columns be sure that they are as dry as possible. It would not be advisable to paint them within a day or two after a hard rain, nor during very damp weather, when the columns would have more or less moisture absorbed in them.



What is a Summer Cottage Without a Big, Hospitable Porch?

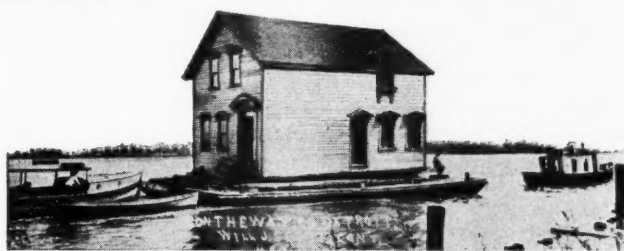


Scott Floated to His Success

By Conda J. Ham

WHEN business grows slack for the carpenter in the small town, there is often little he can do to secure more contracts. But even then, the inventive, energetic contractor can often find ways to extend his operations.

Will J. Scott, a contractor and builder in Marine City, Mich., a small town on the banks of the St. Clair River, which connects Lake Huron with little Lake St. Clair, has solved the dull season problem in his town.



House on St. Clair River on Way to Detroit

Some 40 miles south of Marine City is the rapidly growing city of Detroit. Mr. Scott decided to secure some of the business in the Michigan metropolis, for the call for carpenters there was far in excess of the supply. He was immediately confronted with the problem of the high cost of living in the city, high price of union labor, higher prices of materials, and



House Completed Before Loading on Lighters

other added expense items. So he decided to cut expenses in a novel way.

Three lots were purchased in a desirable part of the city and near the Detroit River, and upon these were erected three foundations. Then Contractor Scott went home and upon his own ground in his yards at Marine City he erected duplicate foundations, just like the ones in Detroit, and upon these built three two-story dwellings. These were finished complete, even to the windows and doors. Mr. Scott used his own material, manufactured at his little mill in Marine City, and used his own carpenters and laborers.

When the houses were completed, Mr. A. P. Kenyon, owner of "The Crackerjack" a tug at Marine City, was secured to move the houses the 40 miles to their new Detroit locations. The houses were moved from their foundations in Marine City onto lighters, and at Detroit moved from the lighters onto their permanent foundations. The loading of the first house onto the lighters was started July, 12, and the last house was put onto its foundation in Detroit, July 26. The expense of the trips had been surprisingly small.

In Detroit, Mr. Scott found the houses readily sold for prices which netted him a handsome profit on his experiment. The route taken in moving the houses was down the St. Clair River, across the full length of Lake St. Clair and then down the Detroit River. Fair weather and calm seas permitted the trip to be made without the slightest mishap.



Limiting Height of Buildings

The following is a partial list of the restriction as to heights of buildings enacted by cities and towns in the United States:

Baltimore—Fireproof buildings limited to 175 feet, and non-fireproof to 85 feet.

Boston—Two and a half times the width of the street, the maximum being 125 feet.

Buffalo—No height greater than four times the average of least horizontal dimensions of the building.

Chicago—An absolute limit of 200 feet.

Cleveland—Two and a half times the width of the street, with maximum of 200 feet. Recesses or setbacks to be counted as added to the width of the street.

Denver, Colo.—Not to exceed twelve stories, and those more than 125 feet to be fireproof.

Jersey City, N. J.—No building or structure except a church spire shall exceed in height two and half times the width of the widest street upon which it stands.

Los Angeles—A limit of 150 feet.

Newark, N. J.—Not to exceed 200 feet, but warehouses and stores shall not exceed 150 feet.

New Orleans, La.—The height at the street line shall not exceed two and a half times the width of the street which the building faces. Setbacks are to be counted as added to the width of the street.

Paterson, N. J.—Warehouses and stores must not exceed 100 feet in height.

Portland, Ore.—All buildings except churches are limited to 150 feet.

Scranton, Pa.—The limit is placed at 125 feet.

The present agitation of the subject in New York will undoubtedly lead to similar restrictions there in the not distant future.

How Building Ideas Impress People

ART AND CLASSIC MODELS—ORIGINALITY AND FREAKISHNESS—PASSING FADS—PUBLIC OPINION WHEN A BUILDING LINE IS VIOLATED

By C. Bryant Schaefer

THERE have been a great many explanations made telling us how to do artistic work. Rules have been laid down for the worker and for the students, for poor folks to follow and for rich people also. The best examples of classic work have been held up as models. The result has certainly been an improvement in taste; but one no sooner thinks himself doing something artistically than the rules are changed or one is told not to imitate.

An artisan must have put some head work into his product if it is artistic. For that reason any labor artistically done stands high in public estimation. What ever a person studies out himself and performs accordingly, is good from his point of view. He has reasons for doing this or that. If you think about it you have to agree with him.

The man who thinks it best to copy a good example builds much that may not be suitable to his circumstances. As others look at his work they discover his mistakes. He may dash on color, slash up timber and blow hard about his authorities but no one believes him.

Some one says a work must have individuality; and as soon as one has done that which was never done before he hears that it is a freak. Sometimes he is told it is nothing new.

Perhaps it were best to allow that sooner or later there is a demand upon every one to show what his own judgment is. With whatever tool it may be, there is a call on all for what is in them. It is where the workman has set his hand in his own way that receives the most attention.

We go back to the days of hand work for suggestive help because the carver, the joiner or the smith all found so many different ways of doing things—old fashioned ways that excite our admiration, constantly.

In these times where every thing has a mechanical similarity, something unusual strikes us with a shock. The finial which we saw the other day (first sketch), had a startling effect. At first glance one would declare that no skilled mechanic would finish off the peak of a shingled roof with a hammered tin ridge.

How did it happen? This battered up tin base to a cast iron cresting. The man

who does not think condemns it without hesitation.

But the man who considers says to himself that a careless builder could not have reached the last point on the structure without making his carelessness evident all over the house, which seemed all right.

Another would declare it was home-made work. But real home-made work is always strong and nice in respect to details, has received time and study.

Some one wants to know if this is individuality, if it is, in short, artistic?

It is found that every real work of art has some point at which it is unfinished.

If a man has built a house carefully, if he has considered the owner as though he were his friend, if he has respected the needs of the occupants and affected his helpers with his spirit of interest—one may be very sure indeed that such a house is artistic work. It is a kind of disposition that upholds itself. It endures. And the breaking off place shows. "Art is long and life is short." Only a very good artist knows when to stop on a work that ever coaxes him onward.

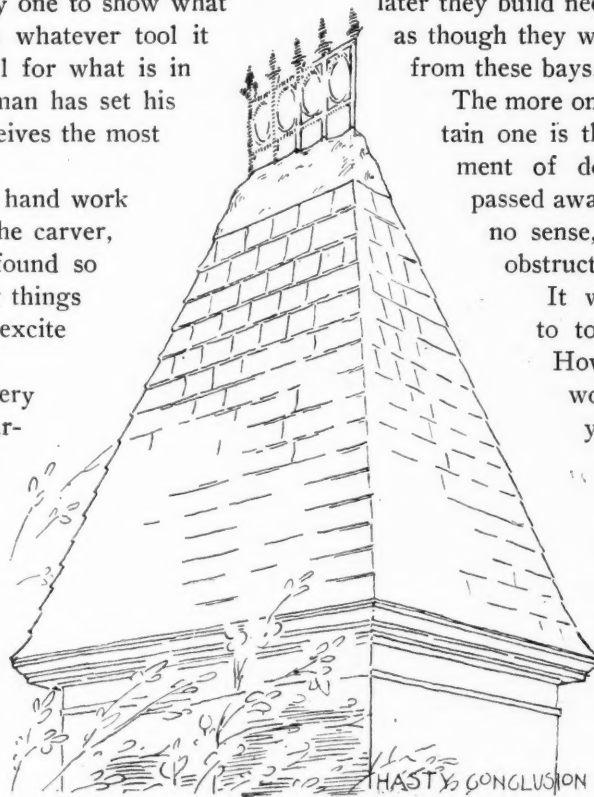
Quite another matter—this porch with the big brick pier in front of the parlor window (second sketch).

Singular—that bay windows came into fashion about thirty years ago in order that people might see out of their houses better, and that a quarter of a century later they build needless obstructions to the view as though they were afraid of seeing too much from these bays.

The more one thinks about it the more certain one is that after the heat and excitement of doing something massive has passed away it will be admitted there was no sense, no practical reason, for this obstruction.

It will become a future fashion to tone down a feature like this. How some of the tough concrete work will be readjusted is beyond present solution.

The third building illustrated arouses sentiments of its own, especially among adjoining builders. These heavy masonry piers look as if they would bark the elbows of the passerby. The cornice is drawn back to the middle of the shaft as though the builders already felt the sting of public resentment; and a dinky little tin gutter is suspended to



The Battered Tin Base of the Cast Iron Cresting Raises a Doubt as to the Builders' Skill



Heavy Porch Pier Cuts off Light and View from Parlor Window

catch the drip water that might drip down the necks of unfortunate neighbors. The piers are twelve inches over the street line, occupying public property and offending honest predecessors in the block who have respected public rights. The owner evidently wished to appear massive, but grudged doing so at his own expense of land.

The porch is wider than necessary. There is no excuse for such building affrontery, unless it is that persons whose consciences seem covered with elephantine hide need to excite a proportionately hard jab to awaken their sense of respect.

From among the persons who viewed this work were two officers who solemnly marched up the street, inspected it as one man, and as solemnly marched back again. One nervous man came out in the morning and viewed the unfinished piers before the neighbors were out to observe him. As they neared completion a watchman staid to guard them over night. It is to be expected that every boy who passes that way with a paint brush or a club in his hands will give the sides and corners a retaliating dig.

A building exterior is a publication of the builders taste. Every passer by gives some of his interest. Truly pleasing work is a joy to the owners; and work that considers the sympathy and convenience of others inherits everlasting good will. It is this sensitive consideration for those affected that distinguishes the true artist and his artistic work.

When the artist goes a step farther and labors to arouse certain emotions in others he becomes a musician. In classic times all the arts were therefore called music.



Easy Way to Drill Glass

Secure a square file and grind off the small end diagonally at an angle of about 45 degrees. Grind from corner to corner, so as to leave a diamond-shaped surface which will form a sharp point at end. To use, place blunt end of file in an ordinary bit stock. Lay glass on a perfectly smooth surface with a piece of cloth under the place where hole is to be drilled. Take some soft putty and make a small ring around on glass where hole is to be and fill the cup-like place



AN ENCROACHMENT.

The Work of a Greedy Man and a Proclamation of the Fact

with turpentine. Proceed to make a hole as you would with ordinary bit in wood, but use less pressure. A clean-cut hole can easily be made in glass of any thickness in this manner.

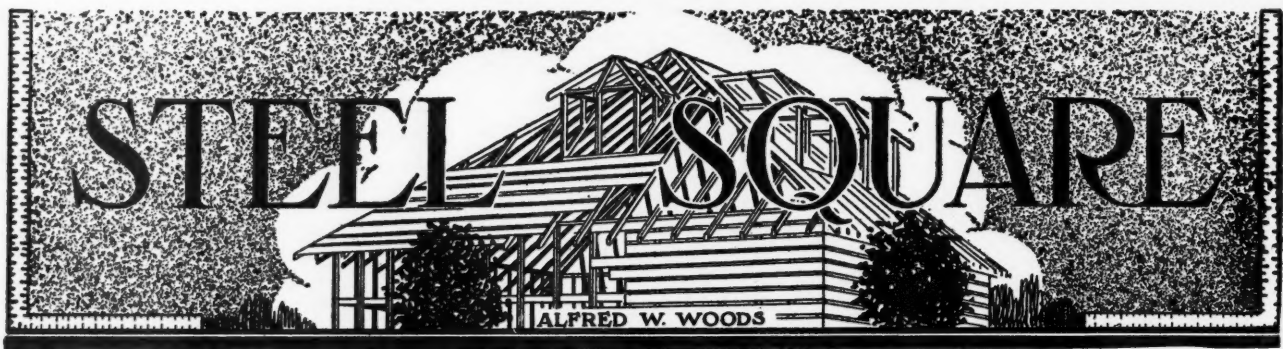


Where Two Flues Meet

A flue built in a wall with a stove pipe opening in two opposite rooms should not have the pipe openings exactly opposite each other. A glass blow pipe is a good illustration of how great the heat is at the point of contact of two flames.

On examining an old flue constructed as above, the brick around the pipe openings were burned off over half their thickness.

An insurance man told me that more than half the flue fires are from this cause. One opening should be at least 6 inches higher than the opposite one. H. C. HANER.



Rafter Framing Illustrated by a Simple Method

A REMINISCENT GLANCE AT SOME OLD TIME BUILDING WHICH TEACHES A PRESENT DAY LESSON

By A. W. Woods

LAST month we apologized for not getting down to business on account of the hot weather, but this month it is hotter and we are beginning to feel if there is not a let up in this torridity pretty soon, we will be off the track and out of the race altogether. We long for a vacation and we wish every carpenter could lay down his hatchet, his saw and his steel square too, and forget about them and hie away for a brief space of a few weeks to the mountains, the cool lake regions, the sea shore or any old place where the sound of the hammer or the swish of the saw could not be heard to break in as a reminder of the shop or the carpenter on the job. But we are fully aware that this is one of the things that does not fall to the average man. Indeed, he may be thankful to be able to toil on twelve months in the year, day in and day out, at the same old grind, in order to provide for the dear ones that they may grow up and prove a blessing later on in life's journey; that is his highest ambition.

But we did not intend to sermonize when we started out, and so we will stop right here and take a look backward through a vale of years to another scene, when father built his house, or rather an addition to the old house. We heard the planning going on, and Oh! what a long wait before the actual operations were started, but times were different then from what they are now. We remember it was after the harvest and the wheat and oats were safely in the stack, that the time of operation was at hand and in the early morning we saw father drive off down the lane on his way to the timber to chop the trees from which to make the sills and other timbers. And how we wondered during that long day how many trees he had cut down and how many it would take to build the house. Great was our surprise to see father late in the evening returning with an empty wagon. The next and for several mornings he was off to the timber bright and early. It was not only cutting down of the trees but they had to be hauled to a saw mill and finally after some time the sawed timbers were brought home. There were timbers for the sills, corner posts, brace stuff and scantlings, as they called them.

A day was set for the carpenters to come, but they did not come with dinner buckets, as they do now days. They took up their bed and board with us until Saturday afternoon, when father took them to their homes in the village some four or five miles away; and then went after them again Monday morning. The head carpenter, as we remember him, was a jolly, round faced old man. He liked boys but wanted them to keep out of the way of the hatchet and the adz; and many times the sharp edge of these instruments fell dangerously near the big toe of first one foot and then the other; a sharp lecture would follow for getting so near.

But to the carpenter work; first, there was the sorting of the timbers and then they began on the sills, the marking of the mortise and the tenons and then the boring for the mortises and the squaring up of same with bladed chisels; and this work seemed like an endless job as the joist were let into the sills in a sort of a notched fashion and with the joist framed to fit into it and the scantlings mortised into the sill, also to the plate above; and for fear the things might get away, corner braces were mortised into the sill and the corner post and corner post and plate were securely fastened with hickory pins driven in, bored holes catching both pieces, good and tight.

We have not had the pleasure of passing that way for nearly 40 years and we doubt if there are any of the neighbors that gathered in on the day of the "House Raising" that have not passed on to that house not made with hands; but we would wager our last dollar that that house is still standing in St. Clair County, Illinois, barring of course, destruction by fire or wind.

Roofs Framed Without Knowing Length of Rafters

But so far, we have not said a word about the rafters on that house. We will have to do it to hold our title.

Well, there was not much to it. Only common rafters and very common at that. Why, they did not even have tails. Hips and valleys and cripples and

jacks were not in it, but the old carpenter was on the job just the same. He cut out a three-cornered board just as the stair builder cuts his pitch board, and he used it in the same way, sliding it along the upper edge of the rafter until finally he stopped and marked the rafter along the edge of his block. This was Greek to us; and the boss did not stop to explain, but just went on sawing wood.

Now, we were all beginners once and there always will be beginners and we trust some that scan these lines have not yet gone very far in the art of rafter framing. It is to this class we will direct the closing remarks.

The run, rise and pitch constitute a right angle triangle, just the same as the three cornered block above referred to. For calculating purposes, the base of the block is made to represent the run and is cut 12 inches long; and the altitude is made to represent the rise in inches to the foot in run, whatever it may be, and the hypotenuse will represent the length of the rafter to the foot in run. By placing this block on the rafter as many times as there are desired feet in the run, the length of the rafter will be determined and by marking along the base at the beginning and the altitude at the finish will also determine the seat and plumb cuts. But you say,—suppose there is a fraction of a foot in the run, then what? Very well; say it is 3 inches more, then at the last placing of the block; make a mark on the rafter along the edge of the block, then measure off 3 inches at right angles to the mark above referred to (plumb line) and then slide the block along the rafter until its edge touches

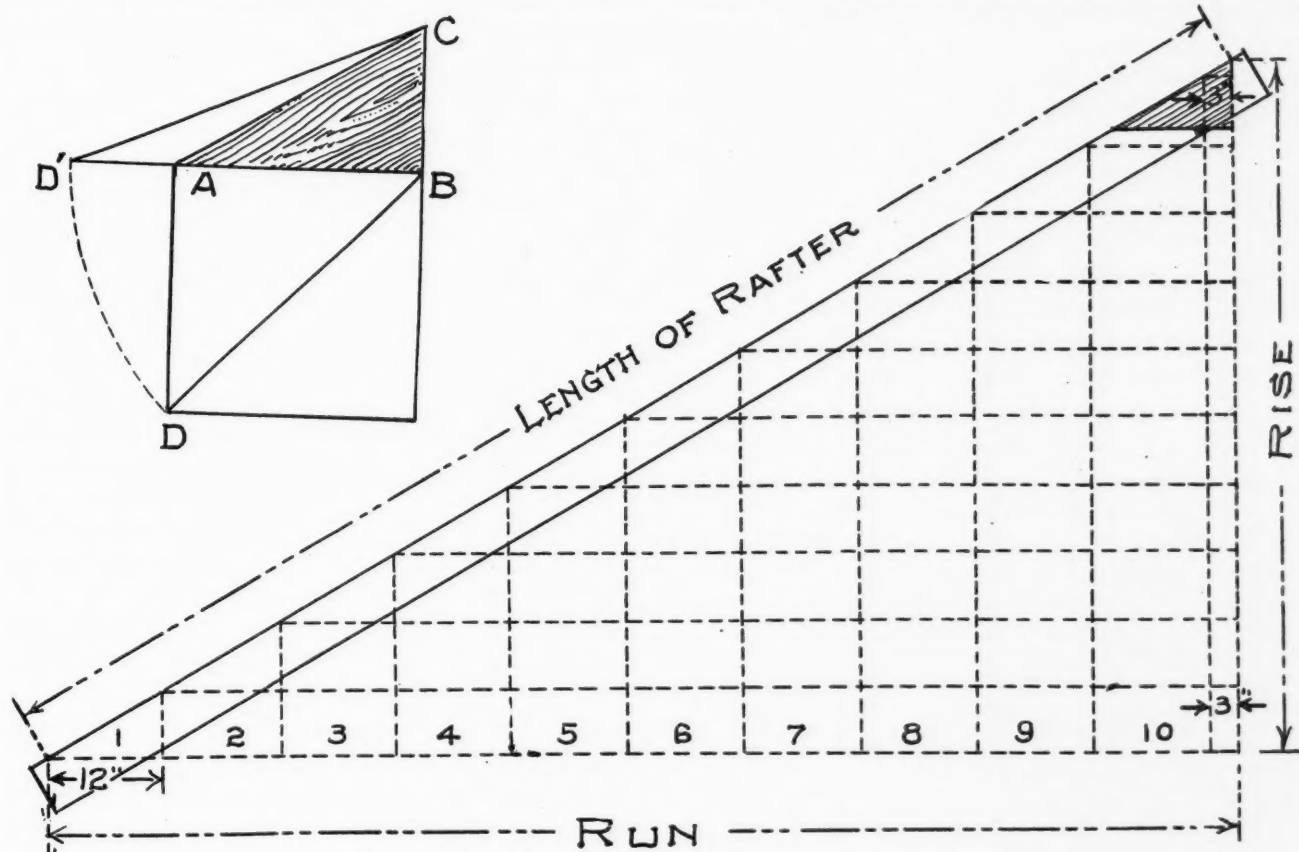
the 3-inch check, and make another mark along its edge, as before and this will represent the proper plumb cut and the proper length of the rafter is cared for without any further calculation about it.

We trust you have heard the knowing ones boast of being able to frame the rafters and yet never know the length of the rafters. There is nothing strange about this, because it is not necessary that they should know, because the manipulation of the block or steel square solved that part of the question and it is not necessary that they should know; but there is this about it, that should be kept constantly in mind and that is the accuracy of the measurements.

The illustration is an example, showing a 10 foot 3 inch run. Note how the true or full size measurements run off into space,—thin air as it were, so thin you cannot see it in actual practice, but nevertheless, these are the true reckoning lines and they must be understood before you can proceed knowingly. And not having known it before, now is the very best time to begin to know it. See?

The above applies to the common rafter. To find the corresponding block for the hip or valley, the rise (BC) will remain the same but the run (AB) should be increased to the length of a diagonal of a square with sides equal to AB, as at BD, which will be the corresponding run for the hip. The shape then of the block will be D'BC as shown in the illustration.

But there is no need of the block at all. We simply use it here to illustrate an old time method. The principle is the same as running the square on the rafter, by taking the run and rise for one foot run.



Length and Cuts of Rafter by Means of Lay-out Block



MAKING POWER

Jimmie's Combination Machine

Part II

WE WORK OUT SOME BORING AND MOULDING STUNTS, WHICH CONVERT ME NEARLY

By W. D. Graves

DID you ever get mixed up with the chicken business? If not, don't; if you have, then you know. It is good business to make and sell chicken fixin's; but one had better let some one else fix the chickens. Harriet seems to have come to about that conclusion—and I'm the victim. She has been trying to start a bed of sweet peas despite the fact that one old hen with seventeen chickens also makes a specialty of sweet peas; so I got an order, this morning, to shut that hen up. I'd 'a' done it too—if I'd caught the hen. I donned my most conciliatory manner—and wore it about three minutes. I shoo'd that hen till patience ceased to be a virtue—or at least mine did—then I tried booting her. I'm considerable spry for my age and kicked hard; but didn't do any damage beyond near breaking a couple of toes against the back door step and severely wrenching my right hip. Finally the dum hen made a bolt in the general direction of Jimmie's house, and I followed. I s'pose the hen turned aside somewhere, for Lorna said she hadn't seen her go by there.

"Say, Dad," said Jimmie, "you didn't make it quite plain to me, or didn't tell me at all, why some bits are made with a screw center and some with only a small square point there."

"The only value of the thread on the worm is to pull the bit into the work; and on machines, either vertical or horizontal, where the feed is by foot power and the slight pressure required for that purpose is immaterial, the bit is under better control with the

simple square point. With the screw worm, unless you have a positive stop for your work to strike against when the hole is deep enough, your bit is likely to keep right on boring, whether you like it or not, till it gets clear through the stock, but where you haven't the force feed it's pretty tiresome work pushing against a plain point."

"Then for this kind of a machine you'd prefer bits with a screw worm?"

"I certainly would."

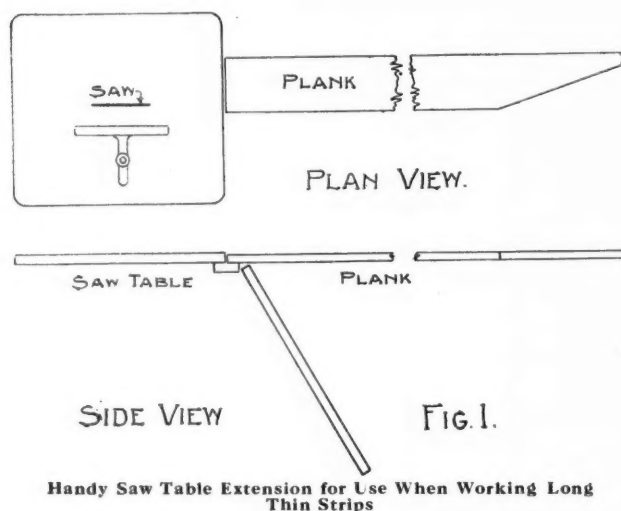
As we talked Jimmie had been putting a $\frac{3}{8}$ inch bit in the machine; and, when he started up, found that the end of the worm described a circle about an eighth of an inch in diameter.

"Now what about that?" he asked as he stopped the engine.

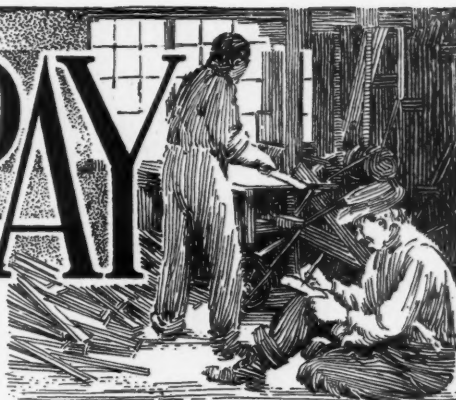
"Sprung a trifle, probably; a light bit will often get that way without one's knowing just how it happened."

Loosening the set screw and drawing the bit out a little I found that it had not been put in the same way as at first. This I corrected, for it is better to put a bit in the same way all the time. I then put a small square cornered block on the table with the vertical smooth side just lightly touching the tip of the bit; and, turning the arbor by hand, caused that point to scratch a circle on the wood. Retaining the block in place with my left hand I sprung the bit with my left till the point remained in the center of the little circle; then we started the machine and it ran all right. While it isn't so essential with the modern heavy machine bits as it used to be with the lighter ones of my early days, I think it good practice always to put a bit in the same way. In order to facilitate doing this, as well as in order to make the bit more secure with less strain on the screw, I prefer to file a flat place on the bit shank where the set screw bears. It isn't essential but, to my notion, it saves bother.

Jimmie was putting the bit in, in order to bore the holes in a lot of sash for those dinky little bolts many people still persist in using just because they are cheap; a job which he completed in less than a quarter of the time it would have taken to do it by hand, and while I was ripping out some moulding strips for him.



WOOD WORKERS PAY



He started to run the bit right through, as one so often sees men do when boring by hand, knocking a big sliver off the inner edge of the sash in almost every instance. I made him set the stop so that the bit wouldn't reach through more than an eighth of an inch, and then hold a small block snugly behind for the bit to run out into. Of course, to get the best results, he had to move the block so as to get a fresh surface for each hole; but blocks are cheap around a wood working machine.

Speaking of ripping the moulding strips reminds me that, for that job and future ones like it, I fixed up a contraption similar to one Blaysdell has used for years; but a description of which, I believe, has never reached just the readers this will reach. We made it supplementary to the adjustable roller trestle Jimmie made a while ago. That trestle was all right to use alone for most long work, much better alone where the work is at all heavy, but for long slender strips this addition is worth while. It is simply a twelve foot twelve inch plank with one end cut on a long bevel as shown at the top in Fig. 1. Across the under side of the square end was fastened a cleat, which slipped under the edge of the saw table. A stick, resting against this cleat and on the floor, served to hold up this end, and hold it against the saw table, while the outer end rested on the trestle previously described.

The strip ripped off, being supported on this plank for practically its whole length, would lie quietly in place till the board was brought back and a new cut

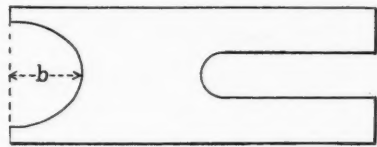
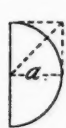
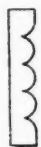


FIG. 2.

FIG. 3.

Moulding Run on Combination Machine and Knife Used

started. It will then be shoved along till its center passes the end of the supporting table, when it will tip up and slide off the beveled edge to the side and out of the way of the next piece. I think I note a cynical smile on the face of some of the youngsters at my remark about the strip lying still till the next one comes along. "Wouldn't it lie still in any case?" you ask.

It possibly might, but probably wouldn't. Any thin strip is likely to spring a trifle, some a good deal more than a trifle, when ripped off; and such very slender

ones, if supported at only one point, will always sag

more or less. Any such little spring or sag will tend to make them cant a little and is very likely to make them catch on the saw teeth. What happens then is quickly over, but it may mean anything from a slight scratch to the loss of two or three teeth or an eye, or even one's life. Blaysdell has a scar on his hand where a sizable sliver went clean through it, I have a nick in my right ear, and most machine operators have some mark which serves to keep in mind the fact that it is well to be everlastingly on guard lest some strip of wood come in contact with the saw teeth at the back.

"It's a pity I couldn't bore the holes in the frames with this machine, too," said Jimmie as he finished the sash.

"Why can't you?"

Jimmie looked at me in disgust;—"How am I to get this machine inside a window frame?"

"Why not bore the holes before the frames are put together?"

"For the very good reason that they are all together and set—but there is something in that idea, and I'll remember it next time. By the way, I can saw the bevels on the bottom rails of these sash, can't I?"

"You certainly can—and I don't see any reason why you can't do all the fitting on the saw and jointer if you had the machine on the job."

"It goes on the job to-morrow morning," said he. "But what about that screen moulding? S'pose we can make it on this machine?"

"Very nicely. You can't make a moulding on this machine that will miter accurately, because you have no way of sizing it to a nicety, but for this work you don't want to miter it. I would get out something thin and with square edges, say like Fig. 2, here. Of course the pattern may be varied widely, but I would retain the square edges of full thickness so that I could just cut the ends square and butt them together, even when the moulding is painted before applying.

"In grinding the knife to shape you'll want to bear in mind that it will not be of just the outline of the moulding, because it strikes the wood at an angle. If you were going to make the half round shown at the left in Fig. 3, your knife would have to be ground out about as shown at the right. To lay out a mould-

Continued on Page 59



Noon Hour Talks by the Boss Carpenter

Talk No. 14

THE BOSS TELLS HOW TO DETERMINE THE SIZE OF A BEAM WHICH CARRIES MORE THAN ONE LOAD

"I SAW something the other day that set me to thinking," said one of the "Squad" when they met for their noon talk, "and I would like to make a drawing of the scheme and see if the Boss can clear the matter up. I believe that it will interest you other fellows also."

He outlined the plan as shown in Fig. 33, and explained that it represented an opening between two walls with a heavy timber beam overhead. This beam supports about 4 feet of 12-inch brick wall and the two headers shown. These headers each carry a part of the floor load on each side of an opening in this upper floor, as might be the case where a floor scuttle opened over an entrance door below.

"The question in my mind," said the inquirer, "is to determine how such a beam or girder should be figured. The Boss has told us in earlier talks how to figure beams for uniformly distributed loads and

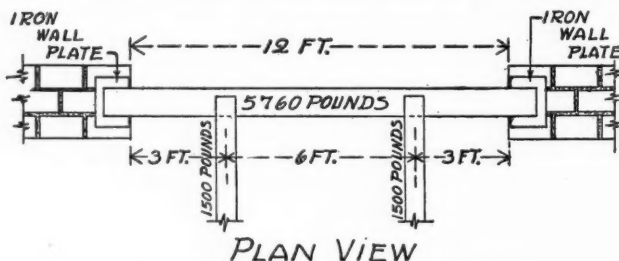


Fig. 33. Girder Over Doorway in Building

for single central loads, but how about this combination?"

"Well," said the Boss, "the first thing to do is to find out the amounts of the different loads to be carried. Second, we will have to find the value of the greatest bending moment in this case so that we can use Formula No. 1 $\left(\frac{pI}{e} = M\right)$ which we explained in Talk No. 1. We have already explained the meaning of the letters in this formula, and values of p for common timbers will be found in Talk No. 5, while values of I and e for common shapes will be found in Talk No. 4.

"Let us assume that each of the headers brings a

load of 1,500 pounds onto the girder. We can calculate the uniformly distributed load due to the 4 feet of 12-inch brick wall by knowing the dimensions of the wall and the weight of a cubic foot of brickwork. For instance, the part of the wall which is supported by the girder is 12 feet long, 4 feet high, and 1 foot thick, and contains 48 cubic feet of brickwork. A cubic foot of ordinary brickwork weighs about 120 pounds. Thus the uniformly distributed weight on the girder is 5,760 pounds, besides the weight of the girder itself.

"Suppose that we use short-leaf yellow pine for this girder. We see from the table of strengths given in Talk No. 5 that the working unit bending strength for this wood is 1,000 pounds per square inch. This gives us our value of p for Formula No. 1.

"Since we commonly use girders of rectangular cross-section, the values of I and e will be $\frac{bh^3}{12}$ and $\frac{h}{2}$ respectively, as given in the table in Talk No.

4. We do not know the values of b and h in this case, but that is a part of our problem. We may assume as a trial condition that the girder is one-half as wide as it is deep. This would make $b = \frac{h}{2}$ in our formula and change the value of I to $\frac{h^4}{24}$.

"A good method for finding the greatest bending moment which will occur in a girder with any combination of stationary loads is to proceed as follows: First, find the amount of load carried by the wall under one end of the girder; either end will do.

"In this case, the amount of load carried by the wall under the right-hand end of the girder will be found by multiplying the uniformly distributed load of 5,760 pounds by one-half the length of girder, 6 feet, and adding the product obtained by multiplying each concentrated load of 1,500 pounds by its distance from the left-hand end of the girder, then dividing this sum by the length of the girder. Or,

$$\frac{(5,760 \times 6) + (1,500 \times 9) + (1,500 \times 3)}{12} = 4,380$$

pounds, As you will see, this is one-half the total load on the girder in this particular case, but the method given will apply when unequal loads are supported at any points of the girder.

"Second, choose a point between the heaviest concentrated load and the center of the girder as a trial location.

"Third, multiply the load carried by the wall under one end of the girder by the distance of that end from the chosen section of the girder. Then multiply all the loads between that end of the girder and the chosen section by the distance of each load from the section. That part of the uniformly distributed load between the end considered and the section chosen should be multiplied by one-half of the length of the girder between the section and that end. Add the products of all loads which act downward multiplied by their distances, and subtract this sum from the product of the wall load multiplied by its distance from the chosen section.

"For instance, suppose that we take a section 5 feet from the right-hand end of the girder. The calculation for bending movement at this section will be of the form

$$\left[4,380 \times 5 \right] - \left[\left(\frac{5}{12} \times 5,760 \times \frac{5}{2} \right) + (1,500 \times 2) \right] =$$

12,900 foot-pounds, or $12,900 \times 12 = 154,800$ inch-pounds.

"Now, try some other section of the girder. Let us try the middle of the girder for this particular case. Using the same plan that we used before, we have an equation for the middle of the beam, 6 feet from the right-hand wall

$$\left[4,300 \times 6 \right] - \left[\left(\frac{6}{12} \times 5,760 \times \frac{6}{2} \right) + (1,500 \times 3) \right] =$$

13,140 foot-pounds, or 157,680 inch-pounds.

"Other sections along the length of the beam should be given the same kind of treatment until the greatest value of the bending moment is found. Trials at other sections in the problem above will show that the greatest bending moment occurs at the center of the beam for this particular case. With another distribution of loads, it might occur at some other point.

"We will now fill in Formula No. 1 and solve for h , the height or depth of the girder.

$$\frac{pI}{e} = M, \text{ or, } \frac{1,000 \times \frac{h^4}{24}}{\frac{h}{2}} = 157,680$$

$$\frac{1,000 h^3}{12} = 157,680, \text{ or } 1,000 h^3 = 12 \times 157,680$$

$$h^3 = 1,892 \text{ or, } h = 12 + \text{inches.}$$

"This shows us that a timber 12 inches deep or high should be used. Since our original assumption was that the thickness of the girder is equal to one-half

of its depth, a 6-inch by 12-inch full size section timber might be used. It would be on the side of safety to disregard our original assumption in regard to ratio of width and depth, and use an 8-inch by 12-inch girder. This is seen in the calculation where we found what number multiplied together three times would equal 1,892. We took a smaller number than the one really called for, but the error was not very great when we consider that we are using a factor of safety of six in the value of p as 1,000 pounds per square inch. The increase in width to 8 inches would more than correct our error. This may be easily checked by filling in the values used in Formula No. 1, putting in values of 8 and 12 for b and h and solving for M .

"This gives you the solution of your problem in a manner which may be applied to any combination of loads.

"If it is desired to test this girder for shearing stresses, you will have no trouble in following the rules laid down in Talk No. 4."



Jimmie's Combination Machine

Part II

(Continued from Page 57)

ing knife in such manner as to produce exactly the shape you want is a matter involving pretty nice draftsmanship and more time than would be warranted by the demands of any of your work. For all practical purposes it is enough for you to remember that the knife shape will be practically the outline of the moulding when it is cut off at a miter; that is, the knife strikes the wood at nearly enough to an angle of 45 degrees. In Fig. 3 the distance, b , on the knife will be practically the length of the diagonal of a square of which the distance, a , on the moulding is one side. In the case of a half round, if you lay out this distance in the center, then mark the width, you can sketch in the curve free hand and grind it out by the eye nearly enough for all practical purposes. In the case of more complicated mouldings you will of course measure all the high points, and probably some of the intermediate ones; but you will never want any more accurate method with your machine. For this little moulding you don't need to lay out the knife at all, any more than to mark the centers of the beads, for you can grind it closely enough by your eye."

Just then I heard the telephone ring and, when Lorna answered it, some talk about hens; so I went on down to Blaysdell's and got some material I'd left there t'other day. Harriet was some grouchy when I got home, but she couldn't reasonably expect me to shut up that hen without proper material to fix the coop with. As soon as it was dark I caught her and nailed her up so tight that she won't bother any more this season. The hen, I mean.



A toy company at Sheboygan, Wis., started out to use only the waste wood from other mills. It has worked out a system of using all small waste pieces so that practically nothing but the sawdust is lost.

to 180 degrees on coming back through column 'B,' then the average temperature of column 'B' is 185 degrees.

"Owing to the fact that the weight of water per cubic foot is less at a higher temperature, it can readily be seen that column 'B' being on the average of lower temperature than column 'A' will also be heavier; therefore, it will tend to drop while the water in column 'A' rises, keeping up the circulation as long as the difference in temperature is maintained.

"This being so, there is no reason why a radiator located at the bottom of column 'B' would not heat properly. In other words a hot water radiator can be located on the same floor level with the heater without interfering with the circulation.

"A typical instance of this kind is shown in Fig. 2, which is a cross section of a small one-story building in which the heater stands in one end with radiators

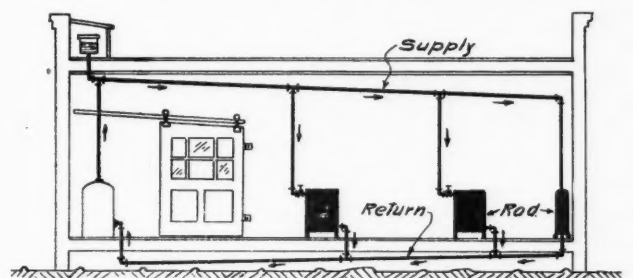


Fig. 2. Hot Water System having Return Pipe Line Below the Floor

on the same floor level and at any desirable point. In this case the hot water rises straight up from the heater to the ceiling; the air in the system finds its way out through the expansion tank which is there connected; and the water then flows along the line at the ceiling, dropping down through the various radiator connections to the radiators and then out of the radiators into the return line below the floor. This is nothing more nor less than a multiplication of the 'B' columns shown in Fig. 1 with a single 'A' column of greater capacity supplying them. Therefore, this system of piping will permit circulation without trouble.

"It is sometimes necessary," went on the Old Builder, "to get your water back to the boiler without going below the floor. For instance, if your floor is of concrete and already laid, it would be an unreasonable matter of expense to break it up in order to get your return line back, as shown in Fig. 2. On the other hand, the door prevents the return line being run along the floor.

"In a case of this kind the scheme shown in Fig. 3 would serve. At first glance this scheme is apparently an impossibility, owing to the fact that we are carrying the cold water up to the ceiling, which is contrary to the natural law, and the hot water down to the radiator, which is also contrary to all our previous experience. The reason why this is possible may be more readily understood by a reference to the diagram in Fig. 1, with the water column 'C,' 'D,' 'E'

and 'F.' This diagram shows in simplified form the principles involved in Fig. 3.

"Assuming that our water comes from the heater at 200 degrees and cools to 190 in rising through the column 'C,' then, as we have previously seen, column 'C' has an average temperature of 195 degrees. On the other hand in column 'F,' if the water drops to 180, the average temperature will be 185 degrees. Therefore, 'F' is heavier than 'C' and the tendency will be to rise in 'C' and to drop in 'F.' Then, to continue, if our water in 'E' falls from 180 to 170 degrees, the average temperature of 'E' is 175, and if it falls again in 'D' from 170 to 160, the average of 'D' is 165. Therefore, 'D' is heavier than 'E,' and the tendency is for 'E' to rise and 'D' to drop.

"The catch in the system lies in the fact that owing to the wide separation between 'C' and 'D' near the boiler and 'E' and 'F,' near the radiator results in an involuntary comparison between 'E' and 'F' on one side and 'C' and 'D' on the other. Whereas, it should be between 'C' and 'F' and between 'D' and 'E,' as we have just done. It is therefore possible to place radiators either at the ceiling or at the floor and carry both your supply and return main on the ceiling, as shown in Fig. 3, without detriment to your system.

"The only point to be careful about is to arrange both the supply and return main so as to free themselves automatically from air. This is accomplished by carrying the supply main into the bottom of the tank and the return main up over the top, the air rising up through these two connections without interfering with the circulation.

"Don't think from what I have said," went on the Old Builder, "that you can do *anything* and everything with hot water, or that you can make it perform the impossible. I have known people to try and heat rooms at a lower level than that at which the heater is located! Just why this is impossible may be readily understood by a glance at the last diagram shown to the right in Fig. 1. Here the boiler has

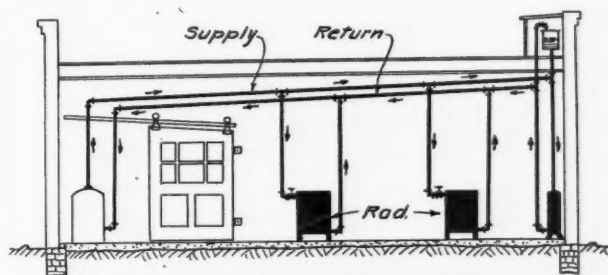


Fig. 3. Hot Water System where it is not possible to get below the floor with the Return Pipe Line

been placed midway between the top and the bottom of the vertical risers 'HG' and 'I.'

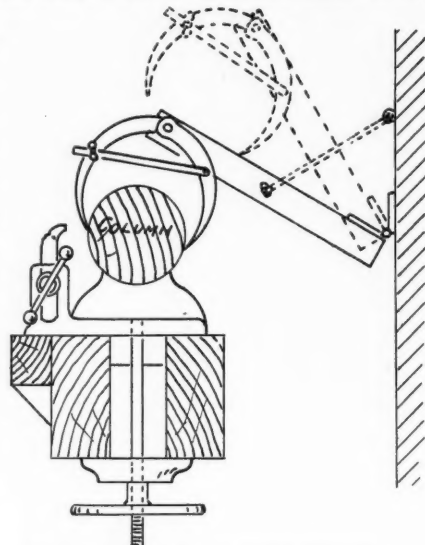
"Going by the temperature we see that the average in 'H' is 197½ degrees while in 'I' it is 190 and in 'G' 182½, but the comparison between the two columns must be made from the combined average temperatures of both 'G' and 'H' when compared to the average temperature of 'I.' Now, 'G' and 'H' averaged together give a result in temperature of 190 degrees which is exactly the same as the average temperature in 'I,' and therefore the column 'G' has the same tendency to drop that the column 'H' has to rise, and so they counterbalance each other, while the sum of the weights for column 'H' and column 'G' will be identically the same as that of column 'I,' owing to the fact that the average temperatures are the same and there will be no circulation whatsoever."

More Shop Kinks

HELPFUL IDEAS AND SUGGESTIONS FOR CARPENTERS, CABINET MAKERS AND MACHINE WOODWORKERS

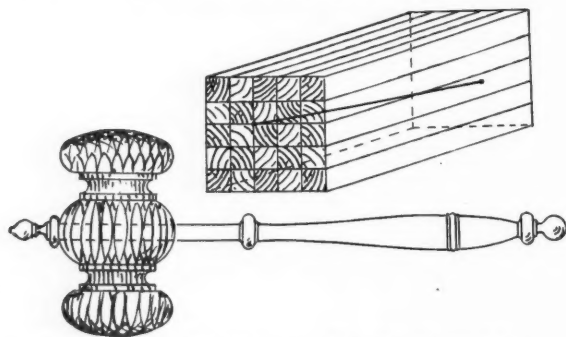
By Wm. C. Jasbury

WHILE in the South some time ago, I visited a mill where Colonial columns were turned in large lots; and to insure haste in caliper-ing them, the turner had a series of home-made callipers hung from the wall in front of him, at various places; so when he turned the shaft down to about what he thought was right, he reached up and pulled down a caliper at that spot, then let go of it and the rod it was attached to, having a spring fastened to it, took it back and up out of the turner's way. I shall draw this critter and see what you think of it.



Calipers Hung Right Where Wanted

FREAK WOOD TURNING. Speaking about that ancient art of wood turning, I have seen and turned many freaks in the shape of glued up stuff. Recently I saw a turner working two gavels, glued up of walnut and white maple, $\frac{1}{2}$ inch square, as shown. One would wonder what shade the thing would assume while revolving rapidly in the lathe,—whether it would show white, black or between. Well this particular case showed white and brown in alternate stripes. And that



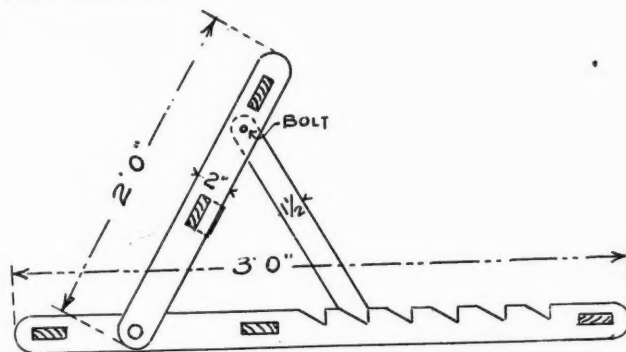
Fancy Gavel and Glued Up Block It Was Turned From

is not all; the turner in order to get a freakish effect, centered it (the block) on the diagonal. That made it look, when finished, as though the several pieces had been inlaid in all shapes. The gavel shape was similar to this, when finished.

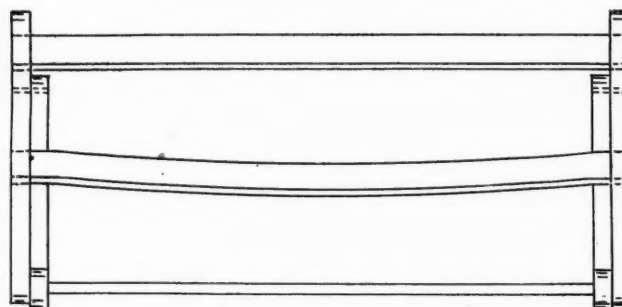
A GLUE STUNT. Recently I saw an Italian cabinet maker do a stunt in gluing that was new to me, and I think it worthy of mention. It was in a case where he has no chance to heat the material prior to applying the glue; he heated a flat piece of iron bar in the stove, not red hot of course, and then laid it on the joint for a moment, then he applied the glue.

You might as well have a piece of ham rind in the joint if the glue is chilled.

THE CONVALS RACK. Some years ago I had a number of racks to build to use in hospitals and sick rooms, when the patient was convalescing. The idea was to place the patient in an incumbent position, put one of these racks with pillows on it, against the conval's back. These racks seem to be in demand, as I have had many more lately. As a rule, I never make anything that some one does not find fault with, but I win out on this rack business, because as soon as the patient begins to masticate the worn fabric, people say,—“Well he is peevish; do not mind what he says.” Now I shall try to tell you what it looks like and how it is made,—the rack, I mean. Oak material, $\frac{7}{8}$ inch thick. Perhaps I can draw it, who knows? Ah! here it is.



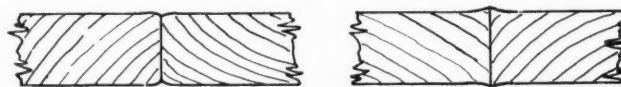
SIDE VIEW.



FRONT VIEW.

Rack to Support Convalescents at the Hospital

A GLUING TRICK. I have seen oak and other hardwood table tops show a sinkage or small crease at the joints when a certain light was shining on the polished top surface. This was a mystery to me for a long time, until a bench cabinet maker told me the



Glue Joint Swells and Then Is Surfaced Leaving a Crease

why. Here is his explanation, and it is a most plausible one, to my estimation. In applying the glue to the edges of the boards, the water moisture in the glue swells the board out for a time; the tops are planed off before the board has time to shrink back to its natural shape, leaving a crease.



New Revised Specifications for Exterior Plastering on Metal Lath

AS RECOMMENDED BY THE ASSOCIATED METAL LATH MANUFACTURERS, YOUNGSTOWN, OHIO

H. B. McMaster, Commissioner

IN March, 1912, we published the standard specifications for stucco on metal lath that had just been adopted by the Associated Metal Lath Manufacturers. These original specifications have brought out considerable discussion; and some changes and possible improvements have been suggested. These Revised Specifications have accordingly been prepared. They embody the best modern thought of architects, builders, and manufacturers. Through the co-operation of the Commissioner we are able to present this advance information to our readers.

Paragraphs marked "a" apply only to back-plastered walls without sheathing
Paragraphs marked "b" apply only to walls with sheathing.
All other paragraphs apply to both forms of Construction.

Materials

1. **Cement.**—The cement shall meet the requirements of the Standard Specification for Portland Cement of the American Society for Testing Materials, and adopted by this Association (Standard No. 1).
2. **Fine Aggregate** shall consist of sand, crushed stone, or gravel screenings, graded from fine to coarse, passing when dry a screen having $\frac{1}{8}$ in. diameter holes, shall be preferably of silicious materials, clean, coarse, free from loam, vegetable or other deleterious matter.
3. **Lime.**—The lime shall be thoroughly hydrated either by the manufacturer or the contractor. If hydrated by the contractor, it shall be slaked in sufficient water to make a soft paste and allowed to stand at least one week before being applied to the wall.
4. **Hair or Fibre.**—There shall be used only first quality long cow hair, free from foreign matter, or a long cocoanut fibre well combed out.

5. **Coloring Matter.**—Only mineral colors shall be used, but no coloring matter which is affected by lime, Portland cement or the elements is permissible.

6. **Water** shall be clean, free from oil, acid, strong alkalis or vegetable matter.

Preparation for Mortar

7. **Mixing.**—The ingredients of the mortar shall be thoroughly mixed to a uniform color, sufficient water added to obtain the desired consistency, and the mixing shall continue until the cement and lime are uniformly distributed and the mass is uniform in color and homogeneous.

The hair or fibre shall be added during the process of wet mixing.

8. **Measuring Proportions.**—Methods of measurements of the proportions of the various ingredients, including the water, shall be used which will secure separate uniform measurements at all time. All proportions stated are by volume. A barrel of cement shall be assumed to contain 3.8 cu. ft. Lime when used shall be measured in the form of putty. Hydrated lime shall be made into putty before being measured.

9. **Quantity.**—There shall not be mixed at one time more mortar than will be used within one hour. Mortar which has begun to stiffen or take on its initial set shall not be used.

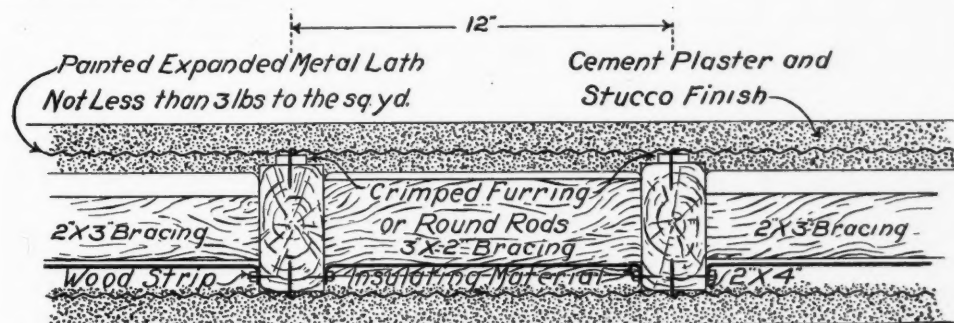
10. **Hand Mixing.**—The mixing shall be done on a water-tight platform and the materials shall be turned until they are homogeneous in appearance and color.

11. **Consistency.**—The materials shall be mixed so as to provide sufficient water to insure a proper bonding and a dense mortar free from voids.

12. **Retempering.**—Retempering mortar, i. e., remixing with water after it has partially set, shall not be allowed.

Structure

13. **Framing.**—Studs spaced at 12-in. centers wherever possible shall be run from foundation to rafters without any intervening horizontal grain in the wood. These studs shall be tied together just below the floor joists by 6-in. boards which will be let into the studs on their inner side, so as to be flush and securely nailed to them. These boards will also act as sills for the floor joists, which in addition will be securely spiked to the side of the studs.



Detail Showing Section of Exterior Wall

"A" Type of Stucco Wall

14. *Bracing.*—The frame of the building shall be so rigidly constructed and braced as to avoid cracking the stucco. (a) At least one point between each two floors, brace between the studding with 2 by 3-in. bridging.

(b) Bracing may be omitted, as the sheathing boards act as bracing.

15. *Sheathing.*—(a) The lath is to be fastened direct to the studding and back-plastered and no sheathing boards are to be used.

(b) Sheathing boards shall be not less than 6 in. or more than 8 in. wide, dressed on one or both sides to a uniform thickness of $\frac{7}{8}$ in. They shall be laid diagonally across the wall studs and fastened with two nails at each stud.

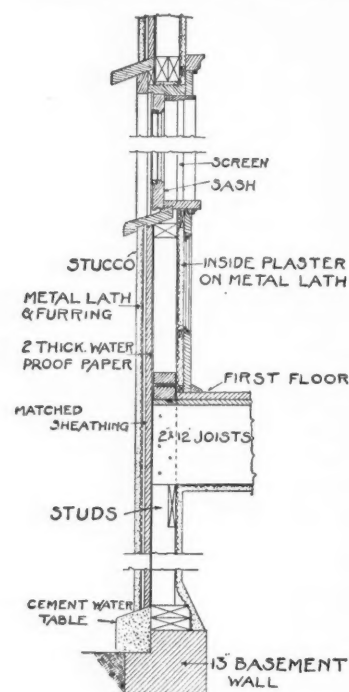
16. *Inside Waterproofing.*—(a) The faces of the stud and for one inch back of the face on each side where the plaster may come in contact with them, shall be thoroughly waterproofed with tar or asphalt.

(b) Over the sheathing, boards shall be laid in horizontal layers, beginning at the bottom, a substantial paper well impregnated and thoroughly waterproofed with tar or asphalt. The bottom strip shall lap over the base board at the bottom of the wall, and each strip shall lap the one below at least 2 in. The paper shall lap the flashings at all openings. When

required, the lower horizontal edge of each strip shall be cemented with hot or liquid tar or asphalt compound, to the strip below and to the grounds of flashings at all openings. All tacking shall be within 2 in. of the top horizontal edge, where tacks will be covered by the lap of the strip above.

17. *Furring.*—When furring strips form an integral part of the metal lath to be used, then separate furring strips as described in this paragraph are to be omitted.

(a) Galvanized or painted $\frac{1}{2}$ in. crimped furring strips not lighter than 22 gauge or other shape giving equal results shall be fastened direct to the studding, using $1\frac{1}{4}$ in. by 14 gage staples, placed 12 in. apart.

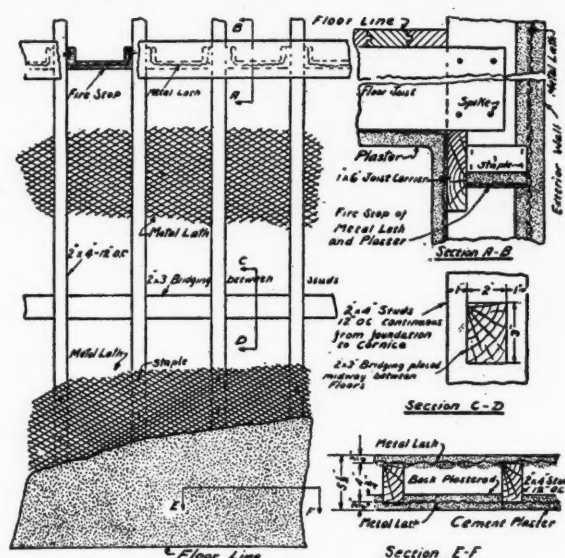


WALL SECTION
'B' TYPE STUCCO WALL

(b) Fasten $\frac{1}{2}$ in. galvanized crimped furring not lighter than 22 gauge or other shape giving equal results over the sheathing paper and directly along the line of the studs, using $1\frac{1}{4}$ in. by 14 gauge galvanized staples, placed 12 in. apart. The same depth of furring should be adhered to around curved surfaces and furring strips shall be placed not less than $1\frac{1}{2}$ in. or more than 4 in. on each side of and above and below all openings.

18. *Preparation of Original Surface.*—All roof gutters shall be fixed and down-spout hangers and all other fixed supports and fasteners shall be put up before the plastering is done, so there will be no break made in the plastering where they are permanently fixed.

Wall copings, balustrade rails, chimney caps, cornices, etc., shall be built of concrete, stone, tile or metal with ample overhang drip grooves or lip and water tight joints, to keep water from behind the plaster.



Details of Fire Stops for Walls

If wood sills are used, they should project well from the face of the plaster and have ample drip groove or lip.

Metal lath shall be stopped far enough above the level of the ground to be free from ground moisture.

Care should be taken to provide for placing all trim the proper distance from the studding or furring to show its right projection after the plaster is on.

19. *Lath.*—The lath shall be not thinner than 24 gauge, galvanized or painted, expanded metal lath weighing not less than $3\frac{1}{4}$ lbs. to the square yard.

20. *Application of Lath.*—Place lath horizontally over the furring strips driving galvanized staples $1\frac{1}{4}$ in. 14 gauge 8 in. apart over the furring strips into the studding. The sheets of lath shall be locked or lapped at least 1 in. and tied at joints between studs both vertically and horizontally with 18 gauge wire.

21. *Corners.*—There shall be 6 in. strips of metal lath bent around the corners and stapled over the lath, or the sheets of metal lath shall be folded around the corners a distance of at least 3 in. and stapled down, as applied. Galvanized corner bead may be applied over the lath.

22. *Insulation.*—(a) After the lath on the outside has been back-plastered, the air space may be divided by applying heavy building paper, quilting, felt or other suitable insulating material between the studs, fastening it to the studs by nailing wood strips over folded ends of the material. This insulation should be so fastened as to clear the bridging, leaving the preponderance of the air space next to the plaster. Care must be taken to keep the insulating material clear of the outside plaster and to make tight joints against the wood framing at the top and bottom of the spaces and against the bridging where the face intercepts.

(b) When quilting, felt, or other insulating material is to be used it shall be supplied to the sheathing boards under the inside waterproofing.

Mortar Coats

23. *Plaster.*—A cubic foot of lime putty contains 0.31 cu. ft. of hydrated lime weighing 45 lbs. and 0.69 cu. ft. of water weighing 43 lbs.

(a) The first coat shall contain not more than two and one-half ($2\frac{1}{2}$) parts of sand to one (1) part of Portland cement by volume. If lime putty is added, it shall not be in excess of one-third ($\frac{1}{3}$) of the volume of cement. Hair or fibre may be added in sufficient quantity to bond the mortar.

(b) The first coat shall contain not more than two and one-half ($2\frac{1}{2}$) parts of sand to one (1) part of Portland

cement by volume. If lime putty is added it shall not be in excess of one-third ($\frac{1}{3}$) of the volume of cement. No hair, fibre or similar material of any kind or in any quantity shall be added to the mortar.

For second coat, the proportion of sand to cement shall not be greater than $2\frac{1}{2}$ to 1 by volume, nor shall more than $\frac{1}{3}$ part of lime putty be added.

For third coat, the proportion of sand to cement shall not be less than 2 to 1 nor more than $2\frac{1}{2}$ to 1, by volume, nor shall more than $\frac{1}{3}$ part of lime putty be added.

24. *Waterproofing*.—When a special waterproofing is to be added to mortar for stucco work, it shall be added in strict accordance with the specification of the manufacturers. If waterproofing is used, lime should be omitted.

25. *Application*.—The plastering should be carried on continuously in one general direction, without allowing the plaster to dry at the edge. If it is impossible to work the full width of the wall at one time, the joint should be at some natural division of the surface, such as a window or door.

(a) *Metal Lath*.—The first coat shall be applied to the outside of the lath and pushed through sufficiently to give a good key. Over the face of the studs the plaster shall be forced well through the lath in order to fill entirely the space between the lath and the stud. The backing coat shall be applied to the back of the lath and shall be thoroughly troweled so that the lath shall be entirely covered. The final coat shall be applied to the face of the first coat.

(b) The first coat shall be applied to the lath and thoroughly pushed through against the inside waterproofing so as to completely imbed the metal of the lath on both sides. Special care shall be taken to fill all voids around furring strips and where laths lap.

26. *Roughing*.—Soon after applying and before the initial set has taken place, the surface of the coats which are to receive succeeding coats shall be roughened with a saw-toothed paddle or other suitable device.

27. *Dampening*.—Before applying mortar the surface of the preceding coat shall be thoroughly wetted to prevent absorption of water from the fresh mortar.

28. *Thickness of Coat*.—(a) The first coat shall be at least $\frac{3}{8}$ in. thick over the face of the lath and project through behind the lath about $\frac{1}{8}$ in. The backing coat shall increase the thickness behind the lath to not less than $\frac{5}{8}$ in. The final coat shall be not less than $\frac{3}{8}$ in. thick.

(b) The first coat shall have a minimum thickness over the lath at any point of not less than $\frac{1}{4}$ in. The intermediate coat shall have a thickness of not less than $\frac{1}{4}$ in., or more than $\frac{3}{8}$ in. The final coat shall have a thickness of $\frac{1}{4}$ in. when placed over an intermediate coat, or $\frac{3}{8}$ in. when placed directly on the scratch coat.

29. *Drying Out*.—The final coat shall not be permitted to dry out rapidly and adequate precaution shall be taken, either by sprinkling frequently after the mortar has set hard enough to permit it or by hanging wet burlap or other material over the surface.

30. *Freezing*.—Stucco should never be applied when the temperature is below freezing.

Finish

31. *Smooth Troweled*.—The finishing coat shall be troweled smooth with a metal trowel with as little rubbing as possible.

32. *Stippled*.—The finishing coat shall be troweled smooth with a metal trowel with as little rubbing as possible, and then shall be lightly patted with a brush of brown straw to give an even stippled surface.

33. *Sand Floated*.—The finishing coat, after being brought to a smooth, even surface, shall be rubbed with a circular motion of a wood float with the addition of a little sand to lightly roughen the surface. This floating shall be done when the mortar has partially set.

34. *Sand Sprayed*.—After the finishing coat has been brought to an even surface, it shall be sprayed by means of a wide, long fibre brush—a wisk-broom does very well—dipped into a creamy mixture of equal parts of cement and sand, mixed fresh every 30 minutes and kept well stirred in the bucket by means of the wisk-broom or a paddle. This coating shall be thrown forcibly against the surface to be finished. This treatment shall be applied while the finishing coat is still moist and before it has attained its final set, i.e., within 3 to 5 hours. To obtain lighter shades add hydrated lime of 5 to 15 per cent of the volume of the cement.

35. *Splatter Dash or Rough Cast*.—After the finishing coat has been brought to a smooth, even surface and before attaining final set, it shall be uniformly coated with a mixture of one part cement and two parts of sand thrown forcibly against it to produce a rough surface of uniform texture when viewed from a distance of 20 ft. Special care shall be taken to prevent the rapid drying out of this finish.

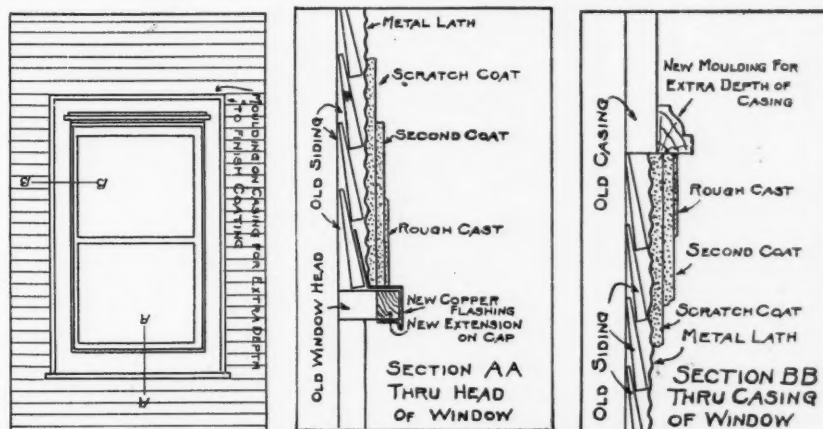
36. *Pebble Dash*.—After the finishing coat has been brought to a smooth, even surface, and before attaining initial set, clean round pebbles or other material as selected, not smaller than $\frac{1}{4}$ in. or larger than $\frac{3}{4}$ in., previously wetted, shall be thrown forcibly against the mortar so as to embed themselves in the fresh mortar. They shall be distributed uniformly over the surface of the final coat and may be pushed back into the mortar with a clean wood trowel, but no rubbing of the surface shall be done after the pebbles are embedded.

37. *Exposed Aggregates*.—The finishing coat shall be composed of an approved, selected coarse sand, marble dust, granite dust or other special material, in the proportion given for finishing coats and within 24 hours after being applied and troweled to an even surface, shall be scrubbed with a stiff brush and water. In case the cement is too hard a solution of one part hydrochloric acid in four parts of water by volume can be used in place in water. After the aggregate particles have been uniformly exposed by scrubbing, care shall be taken to remove all traces of the acid by spraying with a hose.

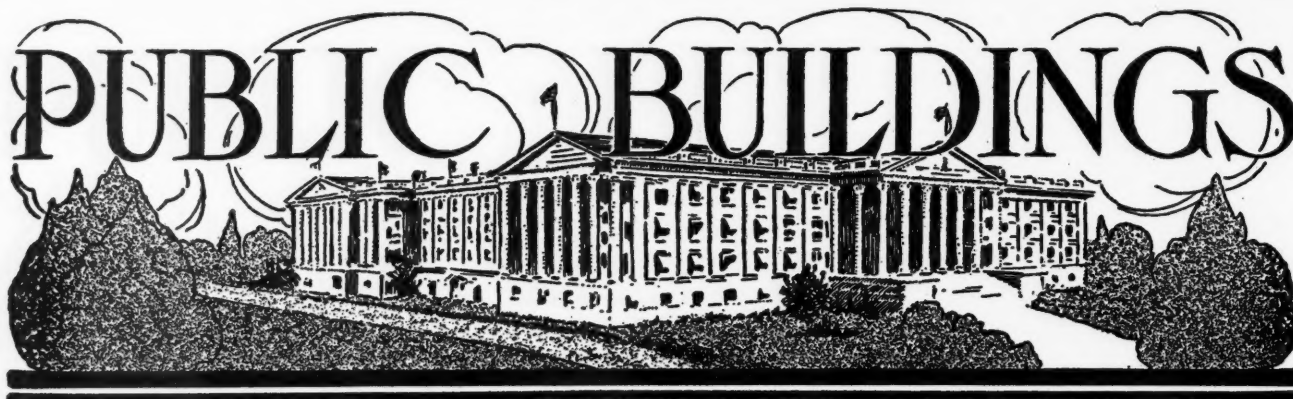
38. *Mortar Colors*.—When it is required that any of the above finished shall be made with colored mortar not more than 6 per cent of the weight of Portland cement shall be added to the mortar in the form of finely ground coloring matter.

A predetermined weight of color shall be added dry to each batch of dry, fine aggregate before the cement is added.

(Continued to Page 67)



Details of Over Coating Method of Remodeling Old Frame Buildings

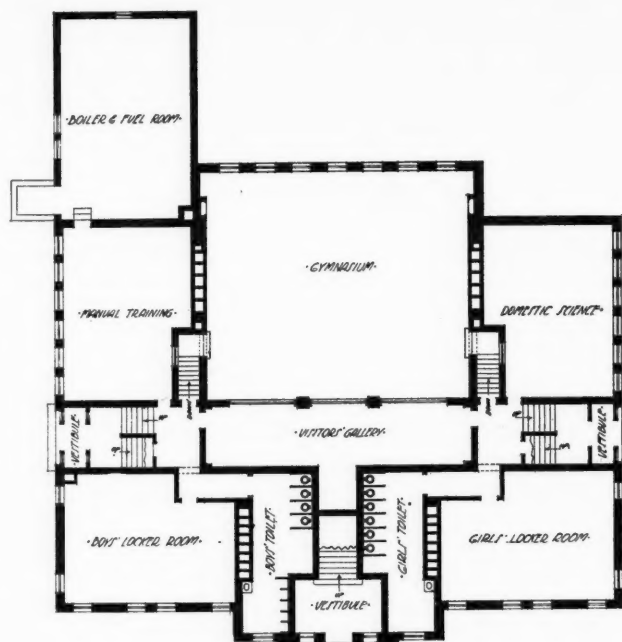


New Darlington, Ind., School

THE new combination grade and high school building now in course of erection at Darlington, Indiana, the plans of which are shown herewith, is an illustration of how, by skilful planning, every inch of floor space can be made to count.

By referring to the plan of the first floor, which is devoted to the use of the grammar grades, it will be noticed that in addition to four standard size class rooms, an auditorium of generous proportions has been provided, which will seat approximately 250 persons. By raising the rolling partitions separating the auditorium from the spacious corridor, an additional seating capacity of nearly 100 may be obtained. The entrances to the stage are through the two class rooms adjoining, making it possible for these to be used as dressing rooms, a very convenient arrangement.

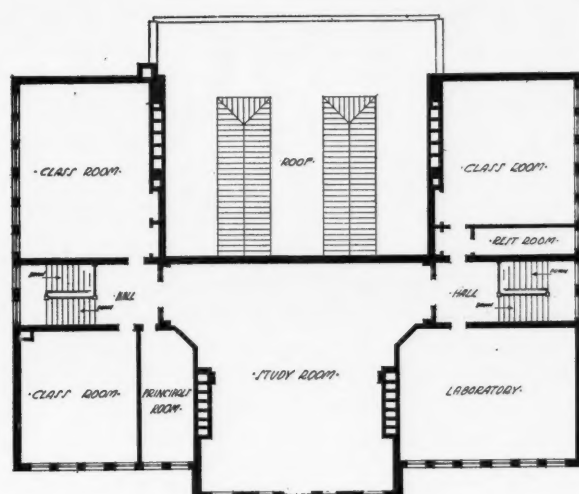
The second floor is occupied by the high school grades, and contains three recitation rooms, a large study room, and a laboratory. The principal's office is also on this floor.



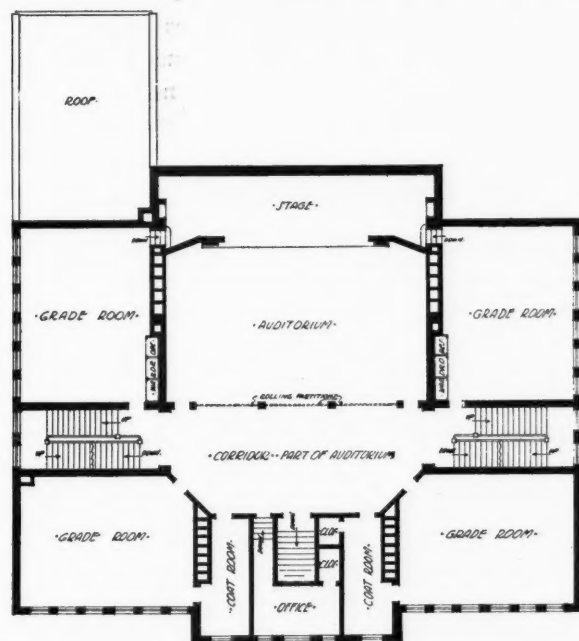
Basement Floor Plan



Modern Brick School Building, Corner Stone of which was Laid Aug. 27th, at Darlington, Ind., G. W. Ashby, of Chicago, Architect



Second Floor Plan



Main Floor Plan

In the basement, directly below the auditorium is the gymnasium, with a visitors' gallery at one end. Convenient to the gymnasium are the boys' and girls' locker and toilet rooms. Here are also the manual training and domestic science class rooms, without which no modern school building is complete.

The building is a neat, substantial structure, up-to-date in all its appointments, and a credit to the community in which it is being built.



Harry Says:

A "JOHNNIE" FOR HOLDING CEILING. Two men were put at ceiling a room and another man was given a room of the same size to work at alone. He finished his room within one-quarter of an hour of the time it took the two men and they all worked about alike. The one man used a "johnnie" to hold up his ceiling, which enabled him to almost double his work. Take two-inch trips about 18 inches long, nail a piece of ceiling 4 inches long between them at one end, first beveling the ends of the long strips to let them slip over easily. Put up a strip of ceiling and slip the

"johnnie" over it and the ceiling already nailed up, and you can nail right along without the ceiling dropping down at the ends.

HAVE FOOTINGS BIG ENOUGH. Don't be stingy with the base of a concrete pillar for a house. I am finishing a cottage now that has concrete blocks for pillars, and the base is only a foot square. The result is a number of places where the frame settled, it having set for two months in an unfinished state. Even the porches settled over an inch on the ends and I have had a time in trying to straighten a dry gum frame that has warped from exposure. The footings should have been 2 feet square, even if only 3 inches thick at the ground. It sometimes freezes pretty hard here, and as all the blocks set up on the ground, the result can be better imagined than described. Concrete is very fine in its place, but unless rightly used it would be as well to have wooden blocks, as they are at least big and heavy enough to get a footing.



Revised Specifications for Stucco on Metal Lath

(Continued from Page 65)

The color and fine aggregate shall be mixed together and then the cement and lime mixed in. The whole shall then be thoroughly mixed dry by shoveling from one pile to another through a $\frac{1}{4}$ in. mesh wire screen until the entire batch is of uniform color. Water shall then be added to bring the mortar to a proper plastering consistency.

39. *Machine Stucco.*—Stucco may be applied by a machine provided the results obtained are equal to those produced by hand work.

Overcoating

During recent years there has come into vogue a method of remodeling old frame houses. The "overcoating," as it is called, is used extensively in all sections of the country and the following practice is recommended.

40. Where a furring strip is used so deep that the space back of the lath is not entirely filled with plaster, some provision must be made for extending the old window and door frames to correspond with the increased thickness of the wall. In some cases the plaster is brought over the old frames in such a manner that a recessed window or door opening is made. In case the furring strips are fastened to the studding, it is not necessary to provide for extending the window and door frames, as the new stucco finish will have the same relations as the old weatherboarding.

41. *Preparation of Original Surface.*—If the weatherboarding is in poor condition it should be removed and furring strips and metal lath applied over the sheathing, to which waterproof paper has previously been fastened. It may be advisable also to tear off the sheathing, in which case the furring strips can be fastened direct to the studding after bracing between the studs.

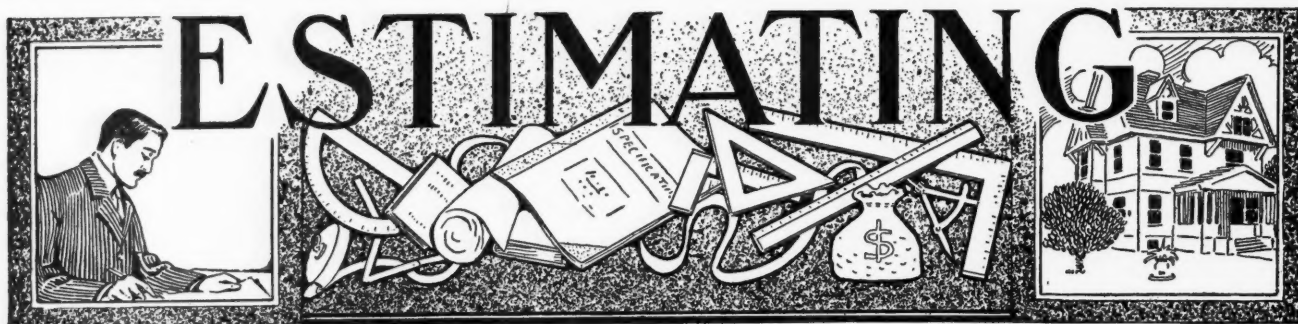
Another method would be to fasten the furring strips direct over the weatherboarding over which the metal lath is applied.

In preparation for any of these methods the house should be gone over carefully to determine if the framework is well enough preserved to justify the improvement.

The doors should be looked after, the studding inspected, partitions and outside walls lined up and brought into plumb.

42. *Furring.*—Fasten galvanized $\frac{1}{2}$ in. crimped furring or other shape giving equal results, vertically over the original surface, whichever of the above may be adopted.

42. *Lathing and Plastering.*—Follow the above specifications for stucco.



Plea for a Better System of Estimating the Cost of Buildings

(Continued from August Issue)

By G. Alexander Wright, Architect

Making up a Bill

NOW that we have briefly considered the qualifications of a quantity surveyor, let us take note of what the preparation of a bill of quantities involves. It may well be said that during the last forty years it has been brought to a mathematical

science, and yet it is really surprising what a vague idea exists concerning the methods, objects and uses of the Quantity System. The fact remains, however, that, where the system has been adopted, responsible contractors refuse to figure without it. Some day that will be the attitude of contractors in this country—when they fully realize the folly of wasting their time and money in competing against each other on quantities as well as on prices.

But to return: Three distinct processes are involved, and each process calls for different operations.

First—"Taking off" and entering every item (or "dimension," as it is called, upon the dimension sheets. This is always done in exactly the same order, in every building; no dimension, however small, is omitted—no guess-work of any kind is permitted. The exact location in the building of every dimension taken is carefully noted, and every figure or note taken is carefully preserved for future reference.

It is impossible to illustrate here the work in detail involved in taking off each trade, but the following may serve to show the general idea: Let us follow a surveyor for a moment in taking off his dimensions for a few items of—we will say common brick work. He always commences taking dimensions at the same point on each floor plan; every length of wall from one angle to the next is measured separately and the dimensions entered in "waste," as it is termed. We will assume that it takes say fourteen dimensions to go clear around a building—these fourteen dimensions and their locations are permanently recorded, footed up, and the total lineal feet is then placed immediately below this, and a line drawn across the column to sepa-

Building contractors are throwing away thousands of dollars every year in useless estimating—laboriously figuring jobs that the other fellow gets. This plan proposed by Mr. Wright does away with this. It puts the expense of estimating where it belongs—on the owner. It is the system in successful operation abroad. It should be given a trial here.

Editor.

rate it from the next item. The dimension is squared, i.e., the number of square feet these figures represent is figured out, and opposite to the total we find a description, thus, for example: 21-inch wall of standard common brick work laid up with lime, mortar and Portland cement,

gauged three to one, pointed with flat joints one side for whitewash and raked out the other side for cementing.

In good practice it might be best to give the number of square feet superficial of wall, and give the thickness. The same method is adopted with each story, with its varying thicknesses of walls, every dimension being entered in precisely the same order, with its particular location noted.

Then we come to deduction of openings. Those within inside and outside reveals (as in the case of box-frame windows) are taken separately, door openings the same. Those of one size and one thickness of wall are "timesed," as we say, and entered in the dimension column, so: "Dtd. 9/3 feet 9 inches x 7 feet 13 inch outside wall, fifth floor."

Then should follow an item, "extra labor," to so many 8-inch common brick segment arches in say three half-brick row-locks to 4-foot 6-inch openings with 3-inch rise in 8-inch wall, include for cutting skewbacks, etc., and for wood-turning piece and setting and striking. In case richer mortar was specified for arches, it would be so stated, and the proportions.

When rough cutting to brick work is required, every square foot of it would be measured. Brick work in footings or foundations, or walls below ground or at unusual heights, should be all segregated and given separately, with full descriptions.

Such items as the following are then taken by the square yard or square foot—viz., selected common brick facing. If joints are struck and cut (as face work), it is taken as a separate item, as should be the case with any portions that are to be pointed with special or colored mortar. Cementing by the square

yard if on ordinary plain surfaces, but if in widths of 12 inches or under, then this is separated and taken by lineal foot; should this work occur on circular surfaces, it would be so described, kept separate, and the radius given. Lineal dimensions are taken of all rough splays and chamfers, flues, pointing to flashings, projecting courses, with the number of mitres, splays, or stops in same; brick sills, with the returns, are numbered, if any.

The foregoing applies to common brick work, as before stated. Now, where "face" brick are used the entire surface of such facing is measured by the square foot, including reveals and soffits (but openings deducted), the kind of mortar and the labor of pointing being given. Here would be taken such items as face arches. Fair cutting by the square foot on same principle as mentioned for common brick work. Then come lineal feet of each course, of which figure sketches should appear. Raking mouldings or belts separate; then follow the number of external, internal, raking, skew or other mitres; also square ends, etc. (if any). All other lineal feet items follow in their proper order, and then in a similar way, concluding with numbered items, which would be described and (if necessary) sketched in the margin. I am aware that this is but a very elementary illustration of the detailed method of taking off, but the principle applies throughout every department, in every trade, from the excavator to the painter, but it would be too great an undertaking to go fully into details here in each case.

Surveyors' quantities are usually measured net, and it is so stated in the preamble of the bill—upon the understanding that the unit price for each item is to be made, by the contractor, to cover trade customs, etc., which differ in each locality.

The before-mentioned dimension sheets are usually checked over with the drawings by a second person, and then all totals are abstracted; that is to say, they are transferred to abstract sheets, under separate headings. In this way many similar items of the same value are collected together and footed up and checked. This reduces the number of items which appear eventually in the finished bill, which is written direct from those abstract sheets, and any further sketches or descriptions necessary for the bidder to thoroughly understand what is required are then finally added. When completed, a sufficient number of copies of these bills are mimeographed, or otherwise duplicated, and a copy is sent by the surveyor to the list of prospective bidders, whose names and addresses have been previously furnished him by the architect.

SOME of the advantages of the Quantity System of estimating to the contractor are as follows:

1. Saving of time and money.
2. Greater precision in measuring.
3. No uncertainty as to interpretation of plans or specifications (the quantities should govern).
4. No visits to the architect's office when figuring,

for explanations or otherwise.

5. No other work is contracted for except the quantity set forth in the quantities.

6. The contractor, if he so desires, can check up the quantities before signing a contract. In an American system of estimating, the quantities should, I think, form part of the contract.

7. No bidder can inadvertently leave out anything, and so in this way arrive at too low a figure.

8. Not having to spend time taking out his quantities, the contractor has time to attend to more profitable business.

9. Systematically arranged bills of quantities duly priced (whether work has been secured or not) form excellent data for making future estimates.

What Shall We Do About It?

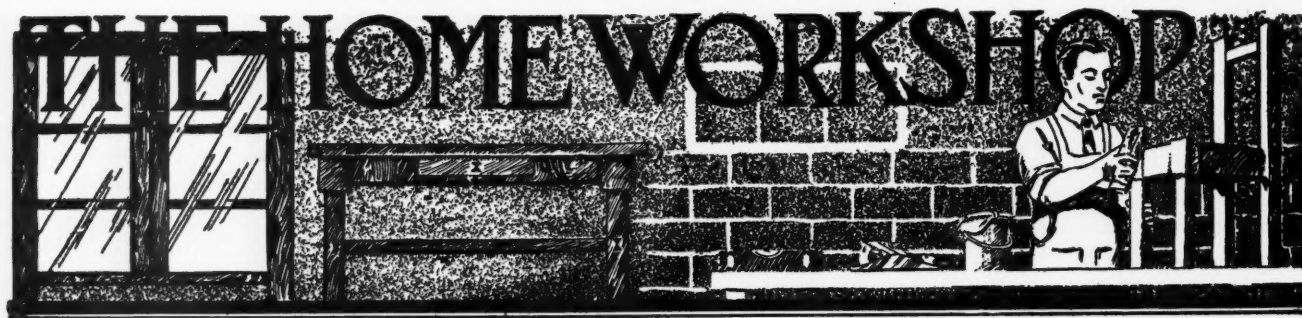
Before an American system can be put into operation it will be necessary:

First—That a committee of representative contractors be selected to standardize a method of measurement to be universally followed by all contractors and architects.

Second—that competent men, mutually satisfactory to contractors and architects, be retained in such numbers as the volume of work may demand. These men, or quantity surveyors, could be placed under bond, covering their competency and integrity until they have been proved and assured; such appointments to be permanent, except for good cause; the compensation of these surveyors to be fixed at a certain percentage upon the total of each estimate; each bidder, of course, adding this amount to his bid.

Third—I suggest, also, that a law be passed requiring that a bill of quantities be furnished (free of expense to bidders) upon all State and other public buildings. I advocated this as far back as the year 1893, and it may interest you to know that such a law is actually in effect in the State of Pennsylvania, and has been since 1895. It does not, however, go quite far enough, as the quantities furnished have no guarantee as to their accuracy. Quantity question is attracting much attention at the present moment among contractors in Boston, New York and other cities, and I may mention, perhaps, that a program is now being formulated to bring this Quantity System question to the attention of every building contractors' association and every architects' society in this country.

I am hoping to shortly see a committee appointed in every building employers' organization in this country, to take up and seriously consider such matters as I have touched upon this evening. Nothing, in my judgment, will tend to elevate the building business and to promote a feeling of mutual confidence and respect between the architect, the contractor and the owner more than the Quantity System of estimating, which, as I think I have shown, aims at absolutely square dealing between the man who pays for the structure and the man who builds it.



How to Build a Sanding Table

AN INGENIUS BROTHER COMBINES AN OLD MACHINE STOP LATHE WITH A HOME MADE SANDING TABLE AND PRODUCES A USEFUL TOOL

By Ira S. Griffith

SEVERAL times in the correspondence department there have appeared articles bearing upon home made machines for use in woodworking shops. Of course, it is somewhat more agreeable for one to be able to order his machines from the manufacturer but it frequently happens that there is no alternative but for the carpenter to make his own machine or go without. There are, too, slack seasons when the carpenter might as well be putting in his time making his own machine as not—the time or labor cost under such circumstances making it profitable for one to build rather than to buy.

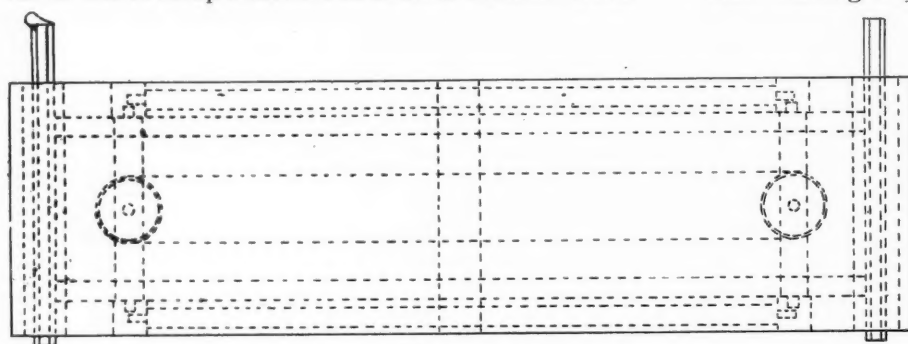
The writer remembers well, before the day of the gasoline engine a hand circular saw built by his father out of scrap materials of another machine which

had served its usefulness and had been sold to the junk dealer. That saw table was made portable and was carried about from job to job and, while it was a "man killer" it certainly saved many dollars during its long life. In this day of cheap and reliable gasoline power one need no longer depend upon human muscle.

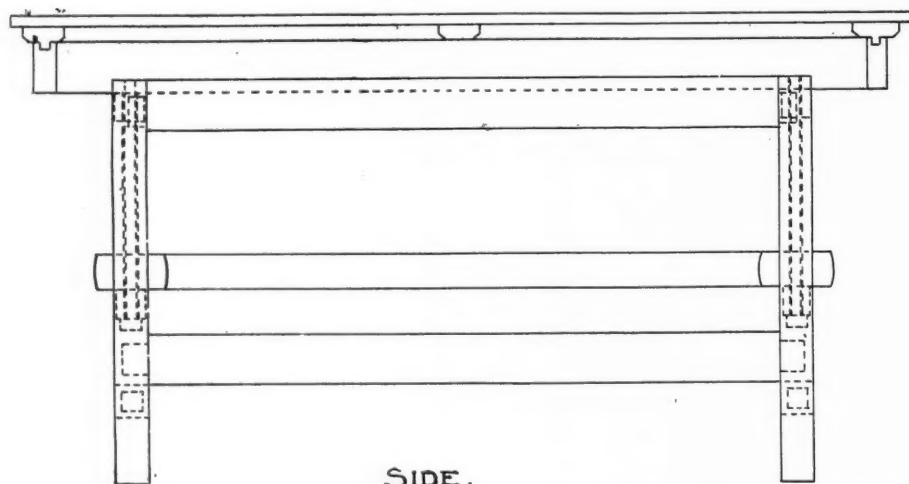
The accompanying picture and drawing show an ingenious sanding machine built by Mr. Harry Hurff. Mr. Hurff was limited as to funds and so used his available money for mortiser, etc. The rip saw he built himself—and it is thoroughly satisfactory for the use to which he puts it. He is now building a shaper making use of scrap material of machines from the machine shop.

This sanding machine was built out of an old

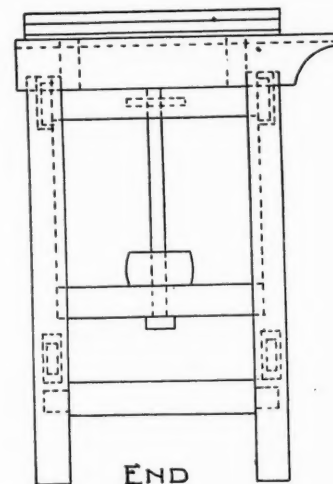
lathe which had been cast aside by the machine shop as no longer fit for their use. This was rigged up as shown in the illustration with a pulley for carrying the sanding belt. On the outer end of the shaft is affixed a disc in front of which is a table adjustable to various angles with reference to the face of the disc.



TOP



SIDE.



END

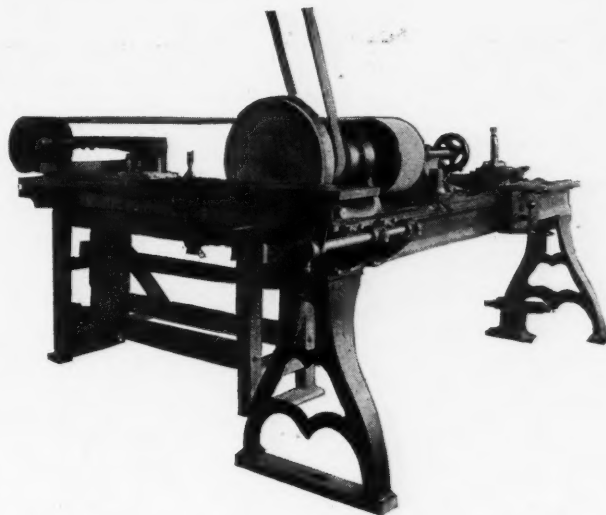
Adjustable Wooden Sanding Table Used in Connection with an Old Turning Lathe

On the opposite extremity of the belt is another pulley of the same size as that on the lathe, carried upon an arm firmly fixed to an adjustable slide which makes it possible to tighten the belt or loosen it.

The two pulleys which carry the belt are home made and the segmental work is finely done. This pulley building is another thing the carpenter may be interested in and we shall describe it in detail in a later issue.

The climax of ingenuity is reached in the adjustable sanding table. The table top slides in a horizontal position carrying the stock under the belt to the most suitable position. Using the screws from some wooden hand clamps and attaching two pulleys to them and connecting these with belting the table may be adjusted to the vertical height desired, both ends of the table being carried up level one with the other.

To insure each of these adjusting pulleys moving alike and to prevent the belt from slipping, small brads at regular intervals engage holes in the belting.



Sanding Table Rigged up with Old Turning Lathe

The sanding pad is easily made and is shown in the picture in position.

An Easily Made China Rack

By H. J. Blacklidge

HERE is a piece of furniture that can be easily and quickly made at home with very few tools, and will be very, very acceptable to mother, sister or other relative or friend who likes pretty dishes. If the material in dimensions given cannot be obtained, just go ahead and make it up with almost anything that is obtainable. For it is a piece that can be made of almost any kind of scraps and still look well.

The end pieces ought to be of $\frac{3}{4}$ -inch stuff and the front edges should be slightly rounded. A spoke shave does this rounding nicest of any tool. But sandpaper or a wood rasp will also do it. The top shelf is 6 inches wide with two grooves near the back. The center of the first is $1\frac{1}{2}$ and the center of the second is $2\frac{1}{4}$ inches from the back edge. They should be placed $\frac{1}{4}$ inch deep and $\frac{1}{4}$ to $\frac{1}{2}$ inch wide. Those

The small straight angle hooks may be placed along the front edge of the middle shelf if desired. And the bottom shelf, too, for that matter.

The back is covered with burlap. It is best to get the prepared burlap. It comes in almost any color to match up with any kind of a wall. Get a shade that will match the wall and so not be conspicuous or get one that will contrast pleasantly. Be careful not to get a color that will "fight" with the color of the wall. Stretch tight and tack it closely. Bore 8-inch holes at B, C, D, E. Blued, round head screws at these points will hold it securely.

STAINING. It should be stained before putting the burlap on, as it makes it so much easier and quicker. Can be stained almost any color, providing, of course, that it goes well with the room in which it will be placed. A stain may be made up of 3 parts benzine, 3 parts turpentine, and one part raw linseed oil, with coloring to make it the desired shade. But there are so many really good stains on the market today that it hardly pays to bother with mixing your own. And they are *almost* as low in cost as the home-made.

Stain it, let dry and sandpaper with 00 paper *very lightly*. Give it a coat of white shellac, let that dry and sand again, also lightly. Give it a second coat of shellac and repeat. Finish with two coats of wax or varnish. Most people prefer the wax finish, as it does not mar so easily as the high gloss of the varnished surface.



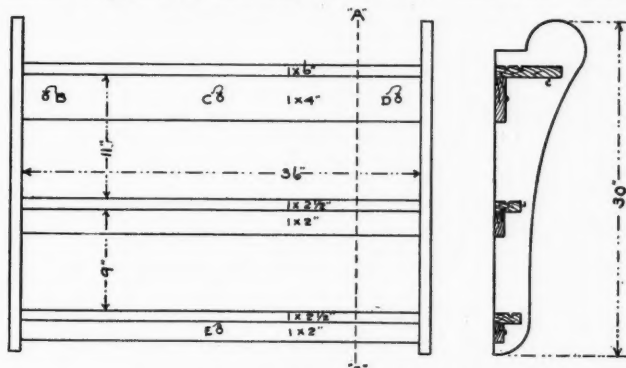
Forest Notes

The national forests of Chile cover about 7,000,000 acres.

The forest service of India has demonstrated that teak wood grown in plantations is just as strong as that grown in natural forests.

Even the well-protected forests of Germany are by no means immune from fire, and the Prussian fire protection system makes use of lookout towers and telephones.

Much of the so-called silk nowadays is made of wood. Germany produces more than one million pounds of this cellulose silk, worth \$1,500,000. A ton of wood worth \$10 yields cellulose worth \$20, and this cellulose yields silk worth \$850.

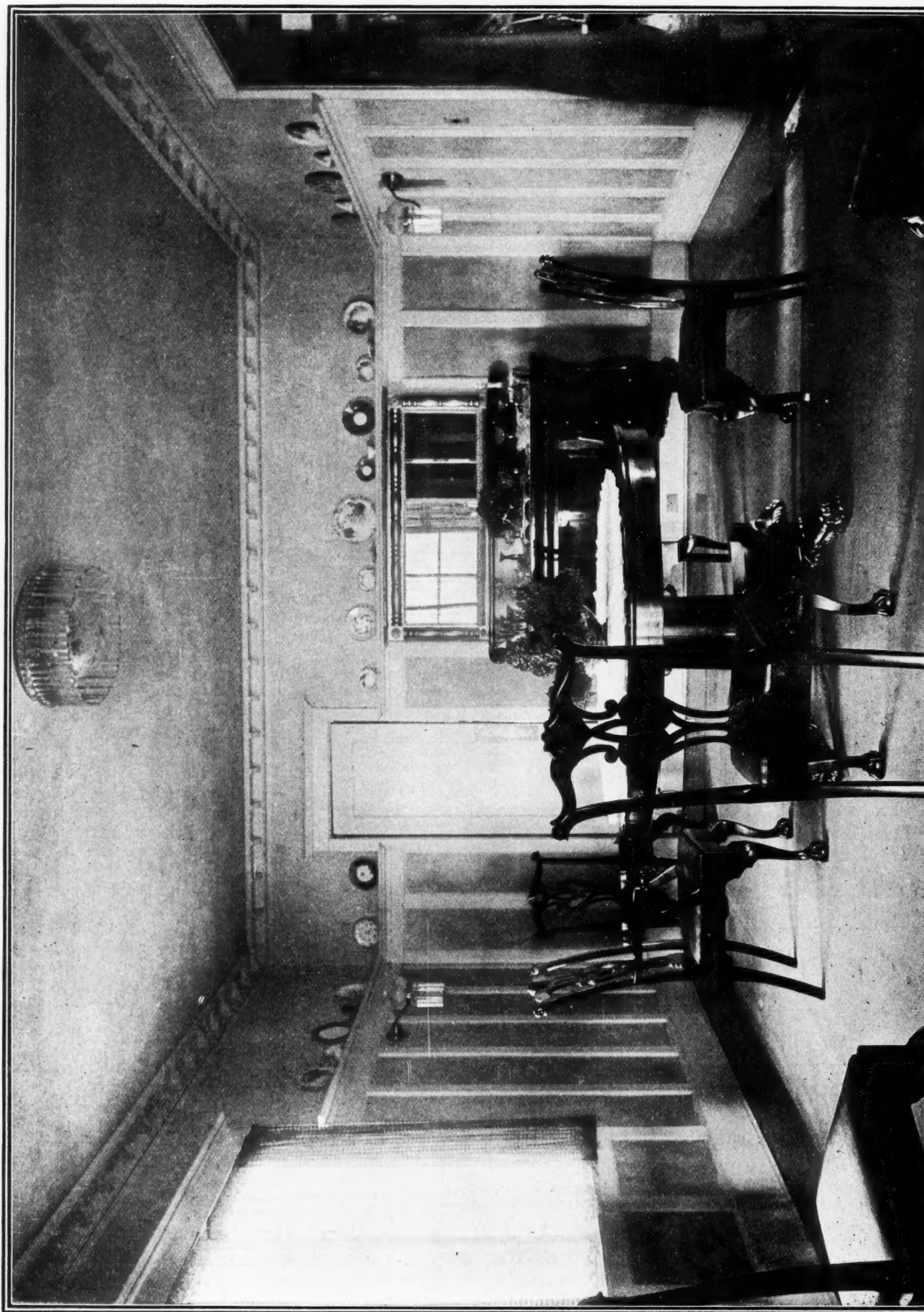


Dimensioned Drawing of China Rack

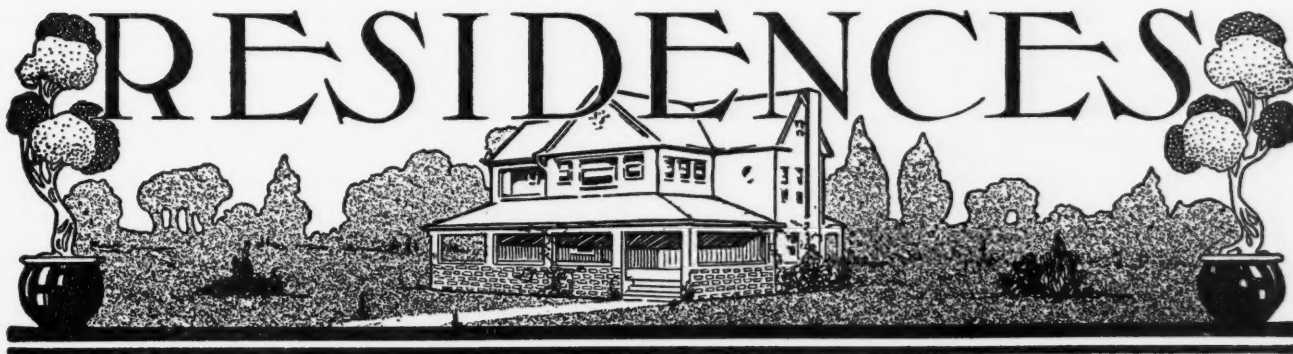
in the other two shelves should be about $1\frac{3}{4}$ inches from the back edge. If you cannot get them grooved at the mill and have no plow to do it yourself by hand, then nail very small strips on the shelf as shown in the small figures.

The ends of the shelves may be gained into the end pieces of the rack, but it is not necessary. Cut them true, put on plenty of good glue and nail with $1\frac{1}{2}$ -inch, No. 16 brads, or four-penny finish nails. The strips under the shelves to be put on the same way and then the shelves nailed to them.

Brass cup hooks should be placed under the top shelf 5 inches apart and about an inch and a half from the edge.



A Dining Room of More Than Usual Beauty. High Wainscoting is Paneled in Grass Cloth; Heavy Wood Strips, Plate Rail, and Baseboard are White Enameled; Ceiling Cove is Ornamented with Moulded Plaster Representing Rafter Ends. Lighting Fixture—a Semi-Indirect Ceiling Bowl with Cut Glass Pendants—is Artistic and Efficient



Plans 6-Room Story and a Half Cottage

ARCHITECT'S PERSPECTIVE AND COMPLETE SET OF WORKING DRAWINGS
OF THIS VERY DESIRABLE LITTLE HOME PLACE

A MOST presentable house is the one shown below, with exceptional conveniences in room arrangement. Concrete blocks form a nice-appearing and substantial foundation and the narrow siding and shingled upper floors can be treated in harmonious colors that will enhance the beauty of the design.

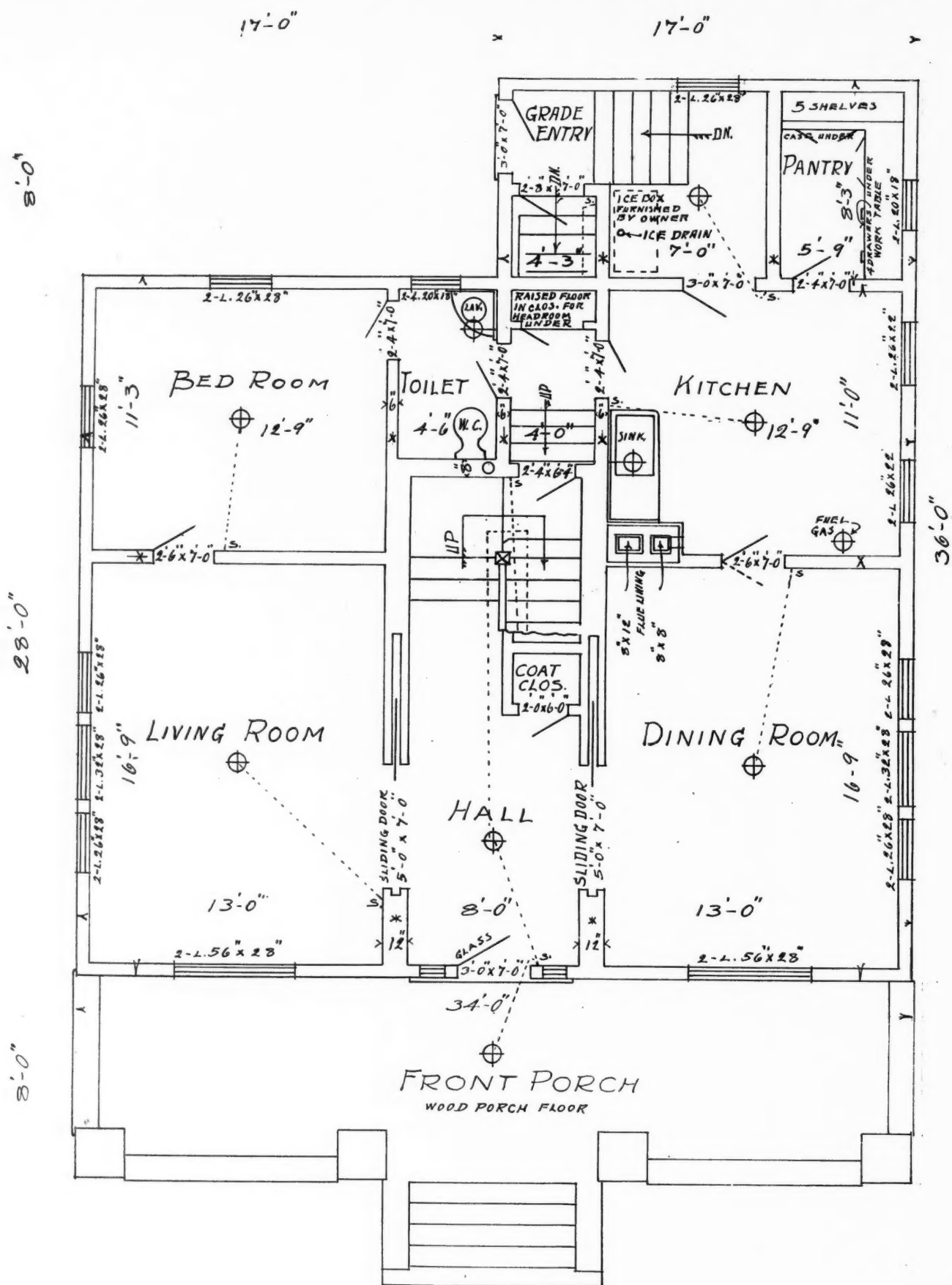
A wide living porch fronts the house; and entry is obtained into a central hall having coat closet and stairway in the rear. On either side of the hall and separated therefrom by sliding doors are the living room and the dining room. Kitchen and bedroom occupy the back of the house, while placed in a space-saving way is a toilet, a closet and a back stair which meets the

main stairway on the landing. A bedroom on the main floor is considered as quite essential by many people, owing to its convenience in case of sickness. The pantry is convenient and has outside ventilation. A comfortably sized back porch accommodates the ice box. The second floor is taken up by the other two bed rooms, the bath room and a clever little sleeping porch.

Where else could one find such closet space as this second floor provides? The plumbing too is so placed as to make installation easy and save expense. Builders will find this not only an economical house to build, but a design equally as pleasing as any shown heretofore.



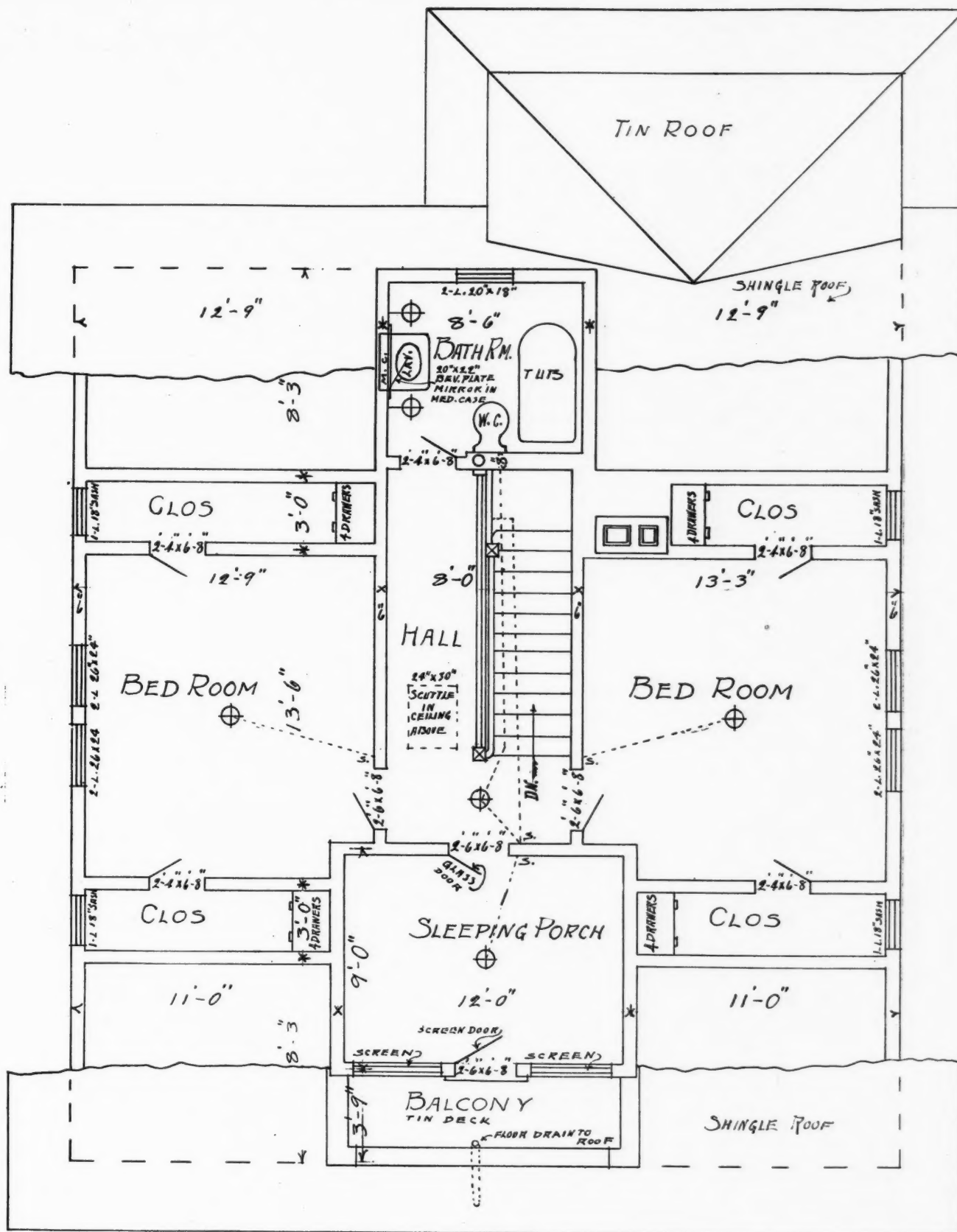
A Cosy Home 34x36ft. Costing \$3000. It Contains Six Large Rooms well arranged
COMPLETE WORKING DRAWINGS FOR THIS HOUSE ARE PRESENTED ON THE SIX PAGES FOLLOWING



MAIN FLOOR PLAN

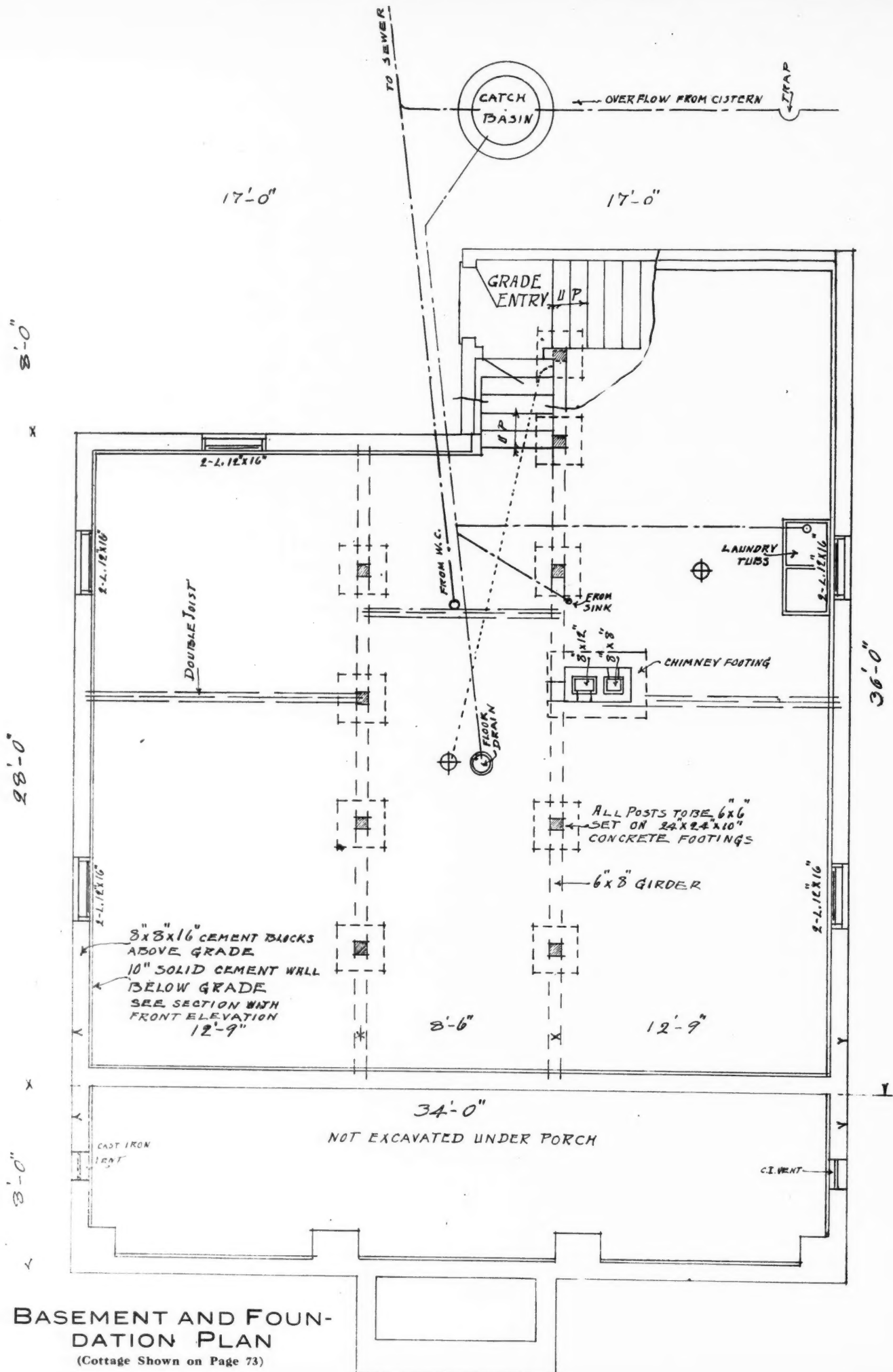
(Cottage Shown on Page 73)

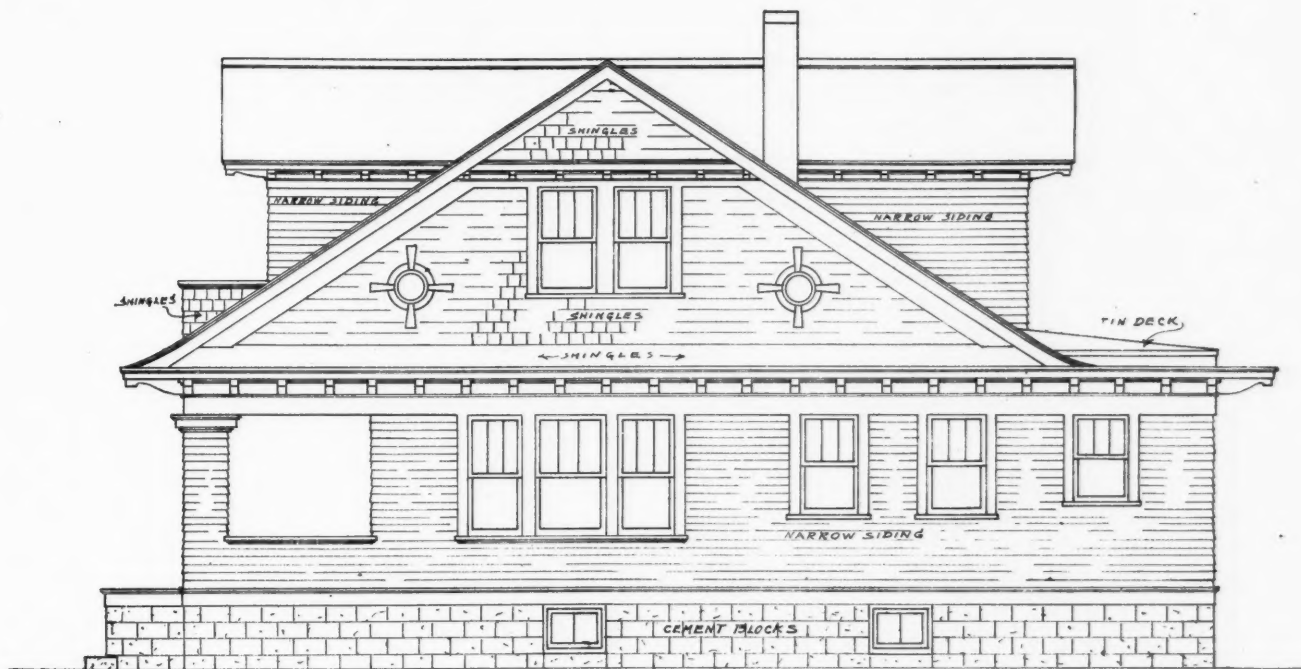
(Cottage Shown on Page 73)



SECOND FLOOR PLAN

(Cottage Shown on Page 73)



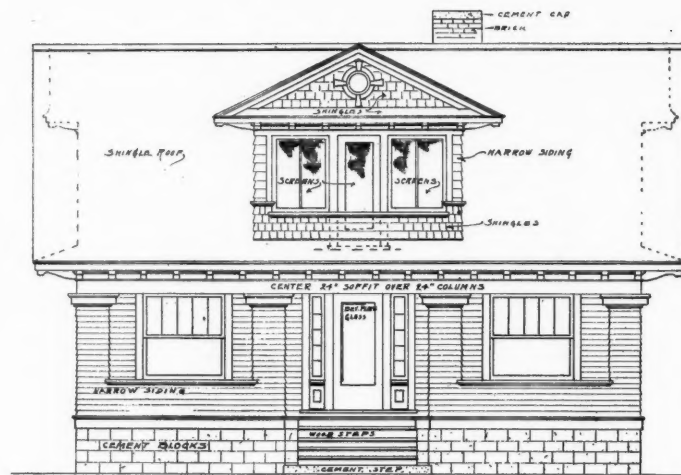
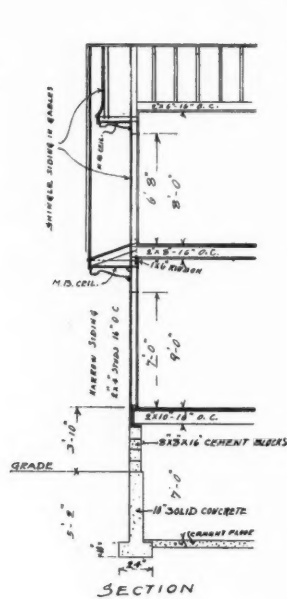


RIGHT SIDE ELEVATION

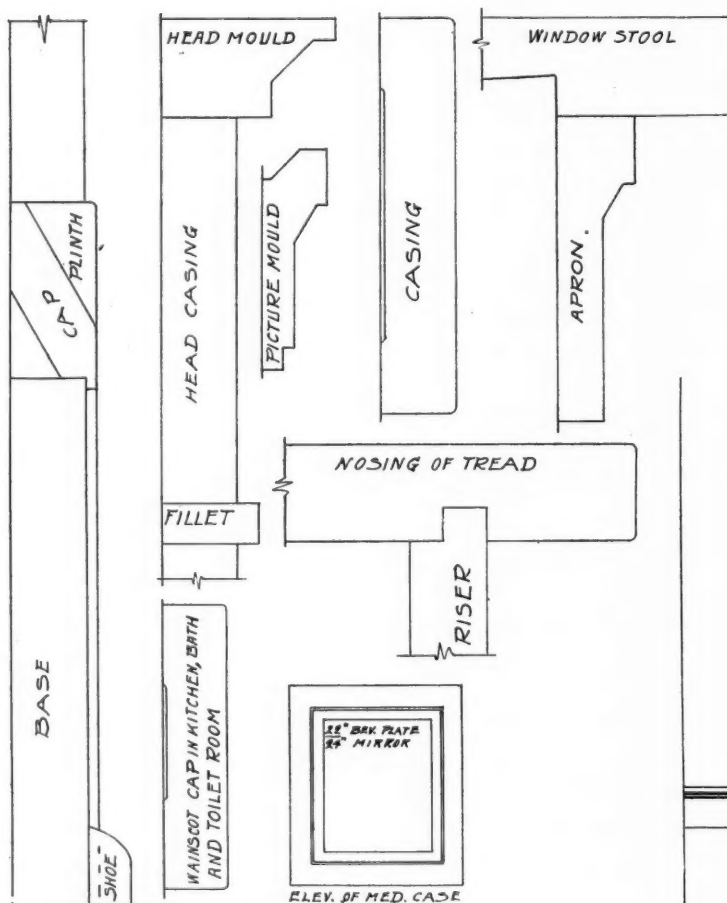
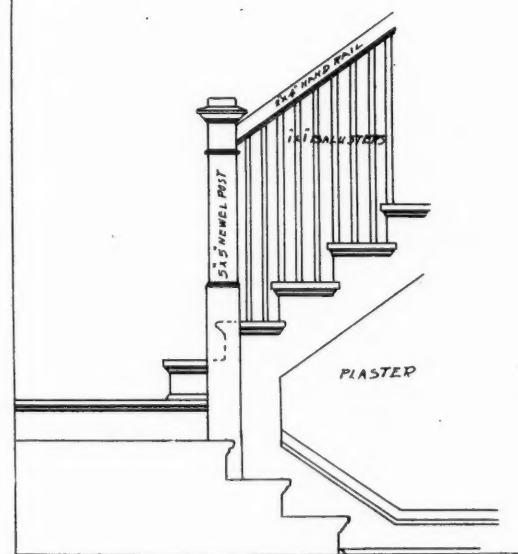


LEFT SIDE ELEVATION

(Cottage Shown on Page 73)



FRONT ELEVATION

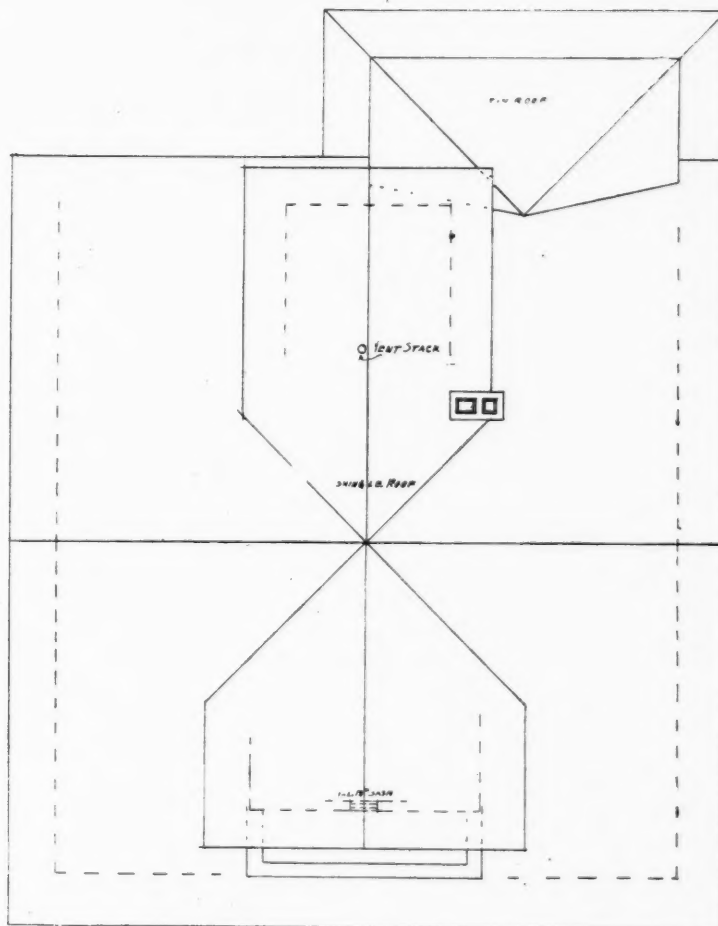
DETAILS OF INSIDE TRIM
#1390

ELEVATION OF STAIRS

FRONT ELEVATION, SECTION AND INTERIOR FINISH
DETAILS OF COTTAGE SHOWN ON PAGE 73



REAR ELEVATION



ROOF PLAN
(Cottage Shown on Page 73)



Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

The Gambrel Roof Question

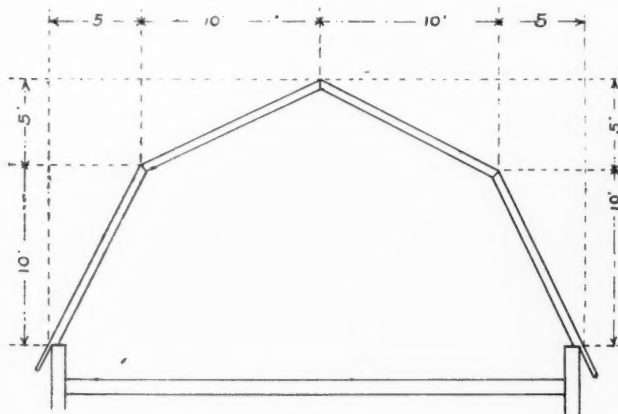
To the Editor:

Holley, N. Y.

In the August issue, you published two interesting replies to Mr. G. H. Craner's question about gambrel roofs.

As I understand from the best authorities, the true gambrel roof is obtained as follows:

Take $\frac{1}{6}$ of width of span for base and $\frac{1}{3}$ of same for the rise; this the first or lower pitch. Reversing these parts, will



Low Gambrel Roof Proportions

give the upper pitch. For illustration, for a building 30 feet wide, the proportions would be 5 and 10 and 10 and 5 respectively.

J. F. HOCHINS.



Makes Lower Gambrel Rafters Longer

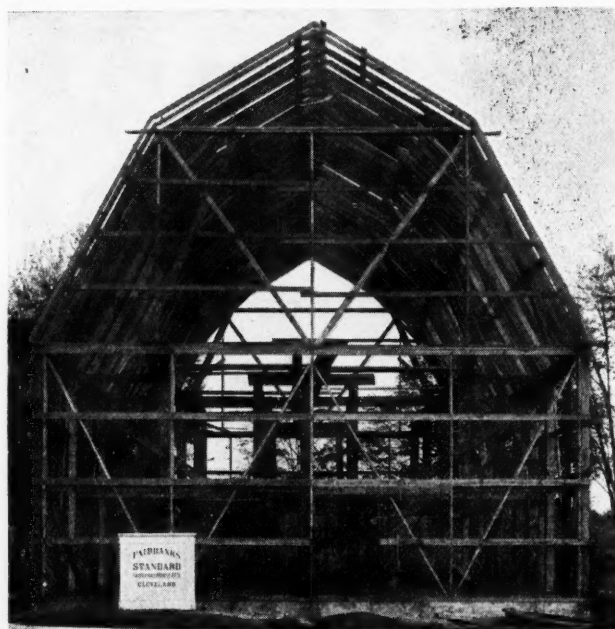
To the Editor:

Berkey, Ohio.

I saw in the August number, page 86, two sketches of gambrel roofs. Their system is all right; but W. W. Colvins' roof is too flat and the lower set of rafters too short. I have built a great many gambrel roofs on new barns and have remodeled old straight one-third pitch roofs. The only object in a gambrel roof is to get more room above scaffolds, etc., to make room for hay cars for slings, etc., in unloading hay and grain. Their plan gives but little more room than a one-half pitch straight roof.

My method is to make the lower set of rafters longer than the upper. I cut the upper on 7 and 12 and cut them the same length no matter if the lower ones are 4 feet longer, setting the lower rafters straight up, thus giving more room in the mows.

I am enclosing a photo of a gable end of one of my famous Ford Model Plank Frame Barns. These lower rafters are about 4 feet longer than the upper ones. It doesn't matter much how you cut the rafter, just as long as they look well and answer the purpose, as they are all self-supporting. It is the frame under them that gets crooked, settles and makes the roof look bad. Put a good frame on a good wall and the roof will be all right, but I think if the brothers will



High Gambrel Roof Proportions

go up higher with their lower rafters, they will have better looking roofs. I keep the one-third of the one-half width in mind all the time, but for the top rafters only, cutting the lower set longer as the occasion requires.

CHAS. R. FORD.

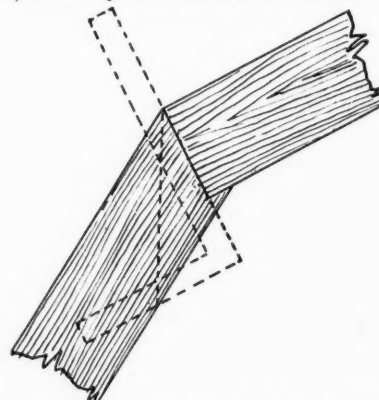


Joining of Gambrel Rafters

To the Editor:

Highland, Mich.

When framing rafters for a self supporting gambrel roof, instead of mitering the joint, I cut bottom end of the rafter square and frame top end of outside rafter to fit. This



allows nailing at top and bottom of joint. The cut on lower rafter is easily obtained by making a plumb mark (see dotted line) and using the figures for pitch of the roof from that.

A. GONNE.

Good Work at Pratt Institute

To the Editor:

Brooklyn, N. Y.

You will be interested in the accompanying photograph showing the work being done by our class in stair building. As you probably know, we are offering both day and evening courses in carpentry and building which are planned to furnish in a shorter time and more efficient way the training that the old system of apprenticeship formerly offered. These courses give the student a thorough knowledge of the fundamental principles in the carpentry and building trades and also a large amount of practical skill that it is impossible under present conditions for him to get in any other way. It is not intended to replace practical experience at the trade which is necessary before one can become a thoroughly competent mechanic, but rather to shorten and supplement it and to lay a broad foundation.

The course also furnishes a most valuable foundation for those who wish to take up work in architectural construction or to become building inspectors or superintendents, or contractors.

The instruction includes mechanical and architectural drawing, plan-reading and estimating of quantities from plans and specifications, practical mathematics, and elementary mechanics, in addition to the work in the shop. The latter includes bench-work and wood-turning, cabinet-making and mill-work, rough-framing, interior-finish, roof-framing and stair-building. Instruction in plans and specifications and the best methods of laying out work is given and is intended

eventually to qualify the student to take charge of work as a foreman.

Periodical visits are made to mills, shops and yards where building materials are stored or being prepared, in order to study the arrangement of machinery, special machines, mill-wrighting problems and the methods of handling work. Frame and concrete buildings in course of construction are inspected by the students to learn methods of erection, types of scaffolding and application of molds and forms.

The shop is thoroughly equipped with a modern mill-plant of wood-working machinery, including lathes, jointer and surface planers, circular and bandsaws, and other wood-working tools, all independently driven by motors.

The young men who have taken these courses in past years have obtained good positions with rare exceptions and have advanced rapidly in their work.

SAMUEL S. EDMANDS,

Director, School of Science and Technology.
Pratt Institute.

**Starting up—Wants Catalogs**

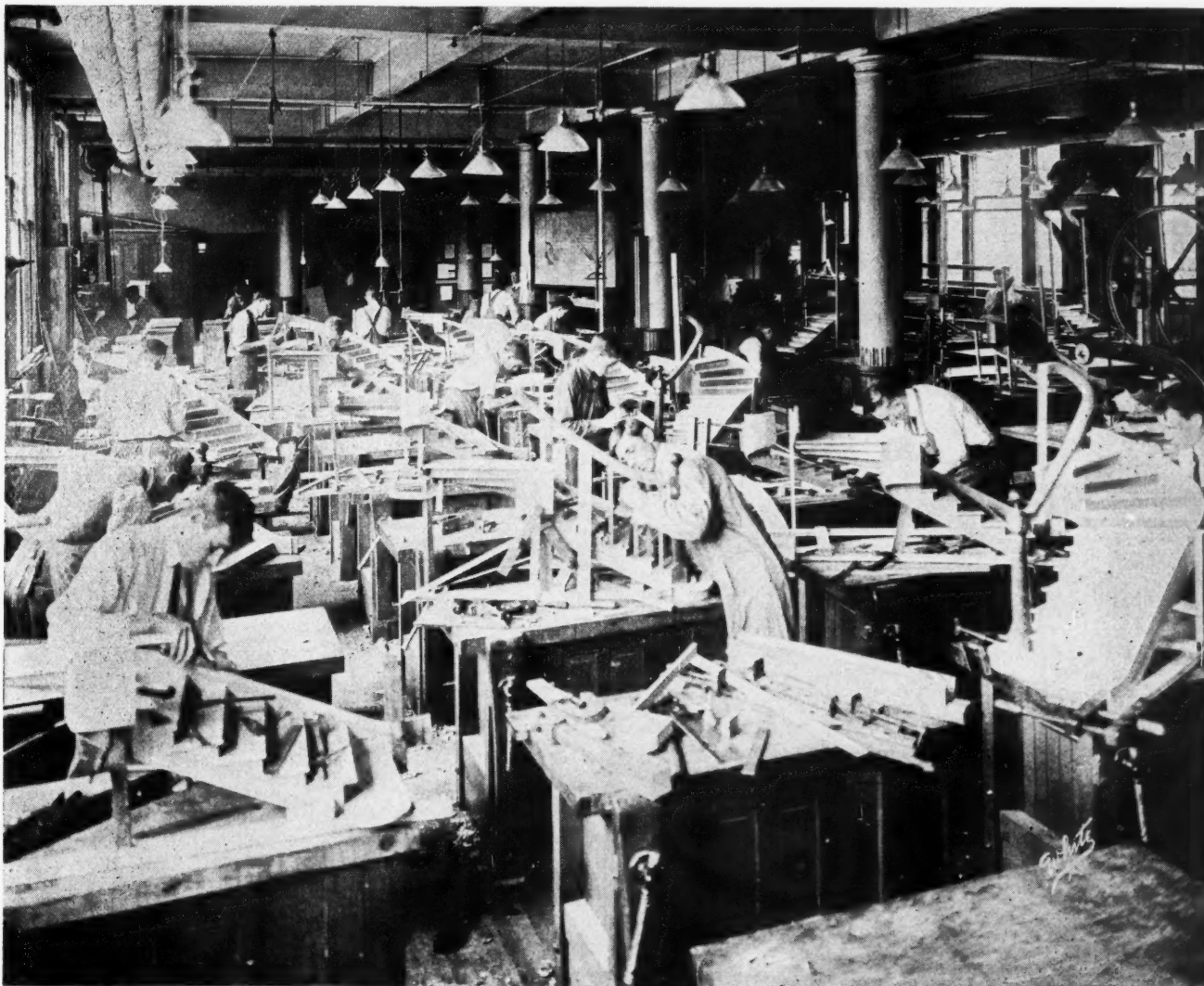
To the Editor:

Melrose Park, Ill.

I wish to announce that I am opening up an office in the Carpenter Contracting business and would like samples of the latest building specialties to show my customers and hang in my office.

I'd like catalogs of millwork, plumbing fixtures, heating apparatus and builders' hardware.

JOHN J. CANTORE.



View of Carpentry Shop at Pratt Institute Showing Work of Class in Stair Building

Some Lightning Experiences

To the Editor:

La Grange, Ill.

I notice that Thos. W. Jones has an article, entitled "Protection against Lightning."

I will relate an incident in my life. About 35 years ago, when I was an agricultural laborer, I was binding oats one day when a thunder shower came up and I took refuge under a large oak tree that towered above any other tree in the little forest. Shortly afterwards, I noticed that the lightning had struck and set fire to a stack in which two men had taken refuge. I at once dashed out in the rain and scattered the burning bundles and found both men dead; and they were as black as negroes. Their clothing was burning, which of course, was soon put out by the rain. Now, according to Mr. Jones, the lightning should have struck the tree under which I was standing.

Since then, I have stood under many trees but never was struck; but five years ago, another man and I were building a house in this town and one evening just as we had quit for the day, it commenced to rain and thunder and lightning. Suddenly a deafening report was heard and a blinding flash half stunned us. A tree down the street, a short distance, was struck and one branch aided by the wind flew about 100 feet and a strip of bark 4 inches wide was stripped off the tree and it afterward died.

GEO. R. LANNING.



Questions for Lightning Rod Experts

To the Editor:

Gravity, Pa.

I am glad to see Mr. Thos. W. Jones' article on lightning, as I think as many buildings are destroyed by lightning, as by all other causes of fire combined. Very few rods are used through these parts, as a man who is "done" by a lightning rod agent, is placed on a par with the man who is "stung" with a gold brick. What have been put up in the past were for the most part placed four or six points, all connected to one ground rod. The last few years there have been several erected using two ground connections.

Now a few questions. First: If rods are a protection why do not fire insurance companies give reduced rates on rodded buildings? Since a large number of fires occur from lightning.

Second: Will a point control a bolt three times its height? i. e., will a point say five feet high from ridge protect a radius of fifteen feet?

Third: Should rods be placed deep enough in ground to be always in damp earth?

Fourth: Will a metal roof distribute a charge so as to make it harmless to the building?

I shall watch this discussion closely, as it seems that with the electrical knowledge of this day there ought to be some way of protecting life and property. EUGENE QUINTIN.



To Trisect Any Angle

To the Editor:

Somerville, Mass.

At the request of several carpenters and builders of this vicinity I am sending you herewith diagrams and specifications of my method, "How to Trisect Any Given Angle." As they claim that every carpenter and builder will be greatly interested in knowing how this may be accomplished you are welcome to publish the method.

As far as I am able to find out, this is the first time that this problem has ever been solved, and this also is the opinion of many prominent educators to whom the method has been submitted for criticism, and this in spite of the fact that the solution has been eagerly sought for centuries.

First, construct a right angle, AOB (Fig. 1). With O as a center and any radius AO describe the circumference ABG.

Produce the line AO to M, so that OG equals GM. From A and M, respectively, draw tangents to the circumference meeting at E. Draw OT to T, the point of tangency of the line ME. As OM equals 2OT the angle M equals 30°, being the bisected angle of an equilateral triangle. (OM is one side, OT is ½ of another, and MT the altitude.)

With M as a center and MA as a radius (which equals 3 times AO) describe an arc through the point A and cutting the line ME at F. Therefore the arc AF is 1/12 of the whole circumference of a circle whose radius equals AM, and equals in length the arc AB in the circle ABG, because this arc is ¼ of the whole circumference of the circle ABG, and this is in turn equal to ⅓ of the whole circumference of the circle of which the arc AF is a part.

Draw through F and B a line cutting the line AM at N. This point (N) forms the basis for the trisection of any angle, for it is a known fact that if the line NBF is swung towards the point A, with the point N remaining stationary, for example taking the position of the line NHK, the points

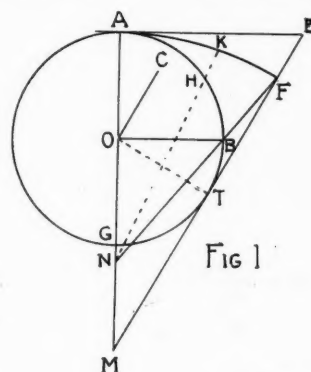


FIG 1

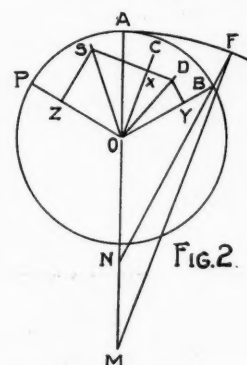


FIG. 2

To Trisect Any Angle

of intersection (H and K) are always equidistant from the point A, if the distances are measured along the arcs, and not as cords between these points.

From this it becomes apparent that if lines are drawn through these points of intersection to the center of the circles of which the arcs are a part of the circumference, respectively, they form angles with the line AM which are invariably as 3 to 1 in size. In other words, any angle in the smaller circle, as AOB, is exactly trisected by a line OC, drawn parallel to MF, because the angle AOB is always 3 times the angle AMF. And this is because, as it has been shown, the arcs are equal in length, and as the whole circumference of one circle is three times that of the other, the angles formed at the respective centers by lines drawn through the extremities of the arcs are necessarily as 1 to 3.

Having thus found the point N, it is only necessary to proceed as shown in Fig. 2. If the angle to be trisected is less than 90°, as AOB, draw a line through N and B to F. Then draw FM, and draw OC parallel to FM. Then the angle AOC equals ⅓ of the angle AOB, and the trisection may be completed by bisecting the remaining angle COB. This is done easiest by erecting perpendiculars on the lines OC and OB at points (X and Y) equidistant from the point O, and through their point of intersection drawing the line OD.

If the angle to be trisected is greater than 90°, as the angle POB, it should first be bisected, and the bisecting line be made to coincide with the line OA. Proceed as before and it will be found that the angle COB is ⅓ of the given angle, being ⅔ of its half. Then the angle POC is bisected and the line OS completes the trisection of this angle.

Thus it will be seen that any angle, regardless of its size, may be accurately trisected, if this method is used, and this problem, which has for centuries defied solution, is solved.

ARTHUR W. WEEDEN.

Quick Jack Rafter Marking

To the Editor:

Fort Frances, Ont.

Enclosed is a sketch of pattern which I use in laying out jack rafters for a hip roof. Fig. 1 shows pattern made out of two scraps, one piece 1 by 6 and one piece 1 by 4. Cut



Fig. 2.

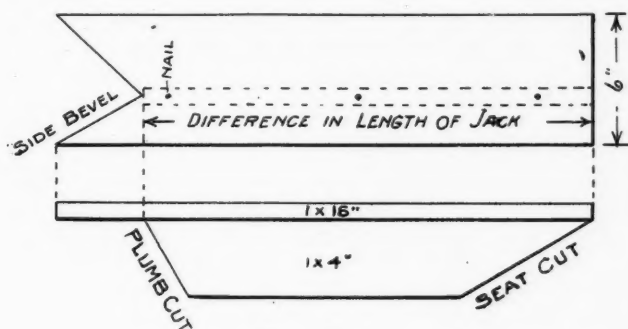


Fig. 1

Gauge Block for Marking Jack Rafters

a bird mouth on end of 1 by 6 for side bevel of jacks. Cut 1 by 4 piece with plumb cut on one end and seat cut on other end. This piece to be the length of difference in length of jacks. Nail 1 by 4 down center of 1 by 6. Fig. 2 shows set of four pairs of rafters ready to cut. Lay common rafter alongside for pattern and square across, length of pattern shorter. Then take each pair of rafters and lay pattern between and mark side bevel and plumb cut at one operation. When all are marked in pairs slide pattern to other end and

mark seat cut. Always cut jacks from all one length stuff. The short ends will make short jacks and have side bevel already cut on them.

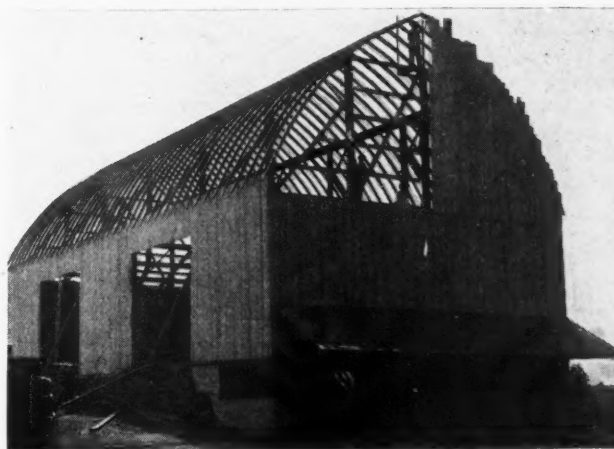
F. G. MYERS,
Building Contractor.

**He will Miss the Sight of a Noble Appearing Barn**

To the Editor:

Hudson, Ind.

I have seen a number of your papers but never saw the picture or a draft of a barn with a round roof; so I am sending you a picture of a 40 by 80 foot barn that I am building now. This picture was taken from the west, showing the curve of the rafters.



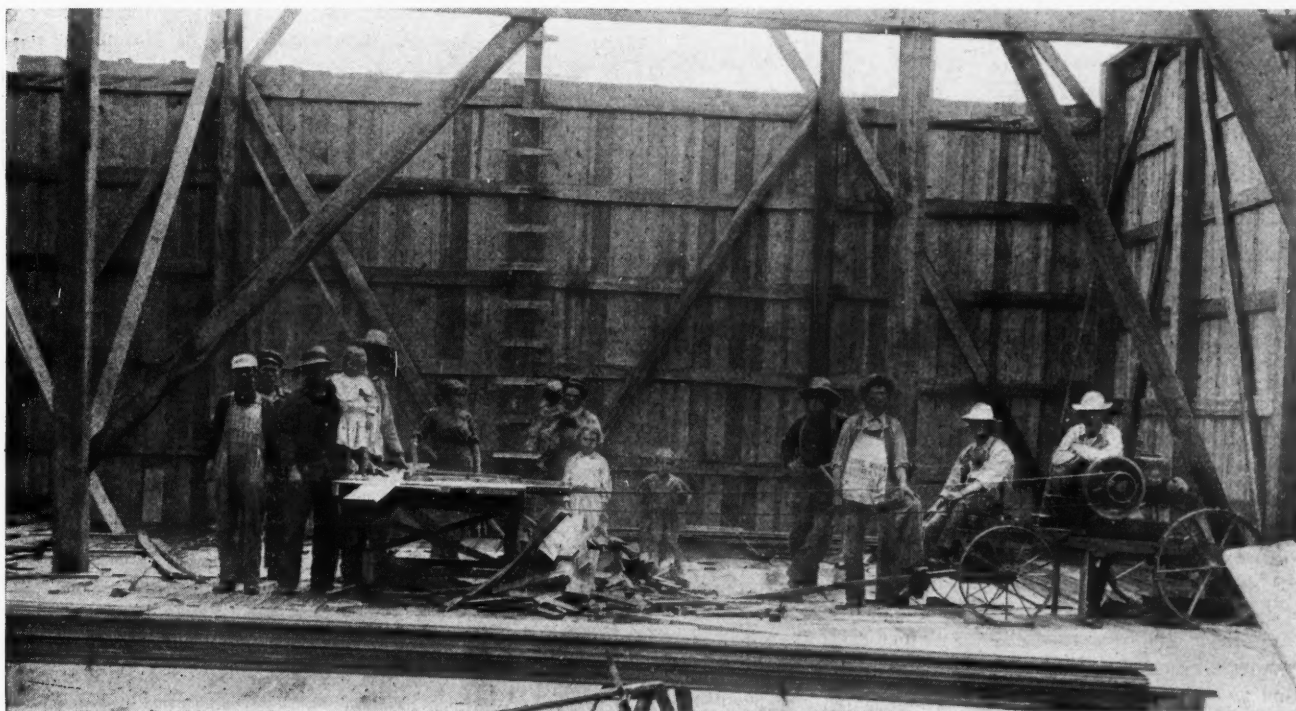
Barn Built by Contractor Neidig for a Blind Man

I also send a picture of my saw outfit for ripping and cutoff work. I use a two horsepower Root & Vandavort engine.

That is myself leaning over the engine, and two of my men are next to me; the third man is at the saw table holding a board ready to saw off.

I am building this barn for a blind man.

ELMER E. NEIDIG,
Contractor and Builder.



E. E. Neidig (who believes in power on the job) and his Gang

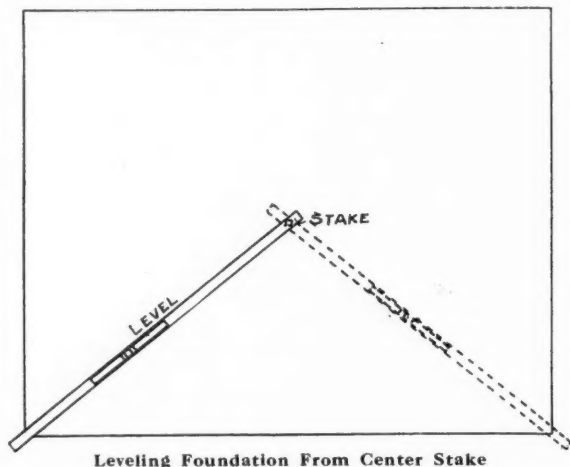
Some Stunts

To the Editor:

Tonkama, Okla.

I am a charter member of the AMERICAN CARPENTER AND BUILDER and can honestly say that it is the best journal of its kind I ever saw. I take great interest in the correspondence department and would like to give a few ideas in return.

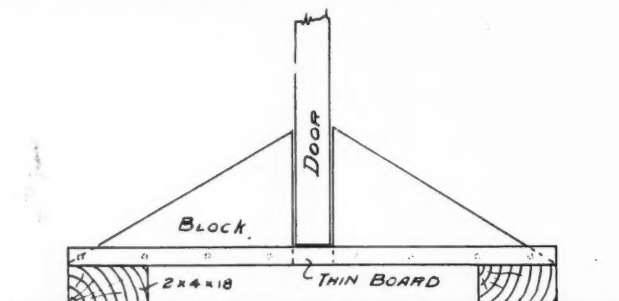
HOW TO LEVEL A FOUNDATION. First, I drive a stake in the ground about center of foundation and leave the stake the height I want to make the foundation, then I



Leveling Foundation From Center Stake

level with straight edge in every direction to where I want my walls, and drive stakes so that the top of foundation stakes are level with center stake. If foundation is a large one, I use two or more center stakes. I find this a more correct way than to start at one corner and level around building, as a great many do.

A HANDY DOOR HOLDER. I use a door holder that is easy to carry around and gives good service and can be made in ten minutes. I take two scraps of 2 by 4 about 18 inches long and set them about 2 feet apart on floor and nail a thin board about 3 inches wide on the center of 2 by 4.

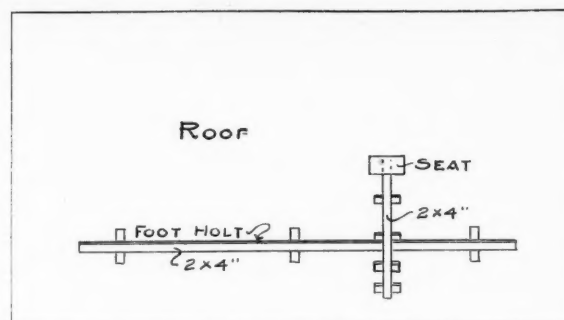


Handy Quickly Made Door Holder

Then I take two pieces of 2 by 6, about 8 inches long, sawed square, and nail edgewise on center of thin board, leaving them apart 1/16 inch wider than the door is thick. I drive a small nail through front end of floor pieces, letting it stick through about 1/8 of an inch to keep holder from slipping on floor. The weight of the door in slot clamps and holds it so that you can work on the door in center of any room.

RAW OPENINGS. In answer to Neil McCallum's question about raw openings, the easiest way I know of is as follows:

For outside doors, cut the opening in the clear so as to be 3 inches wider and 3 inches higher than the door, measuring from top of floor joist. For inside doors, make the opening 3 inches wider and 1 1/2 inches higher, measuring from top of finished floor. For windows with weights, make openings 10 inches wider and 11 1/2 inches longer than the glass. This measurement is for two light sash.



Serviceable Roofing Scaffold

A SHINGLING SEAT. I take a 2 by 4 about 3 feet long and saw top end on a bevel, nail seat to the bevel and on back of 2 by 4 nail cleats about 5 or 6 inches apart in clear, so that the cleats will fit over the 2 by 4, toe held on roof. Then your seat may be raised or lowered on roof, so as to place it just where you want it, as per sketch. I use a shingling gauge on my hatchet and shingle 5 or 6 rows at a time and only chalk up once in a while to keep the row straight.

I would like to hear from some of the well experienced Brother Carpenters on the amount of work of different kinds that they can do in ten-hour days. I do not mean a big day's work, but a general average that could be depended upon for estimating labor. Properly estimating labor of different kinds is one of the most important parts of a builders success.

C. F. MAIMBOURG.



Jasbury Jasburies About Mechanics

To the Editor:

Asbury Park, N. J.

There seems to be no particular ear marks to the carpenter, cabinet maker and mill man. Some one on whom you would hitch your star, would fail to make good and others that would be scarcely fit to look at, would come under the wire a full neck in the lead.

I know a Jewish cabinet maker who is without doubt the best bench hand I ever knew; as to machinery work, he makes a mess of it, worse than a Jersey boarding house hash. He is also very quick and has the oddest ways of getting out a job; but the result is sure blue ribbon. But he makes more mistakes than any three other men in the shop. The part answer for his errors is this; he has the most difficult work to do and being so quick, he works ahead of himself. Speaking about mistakes,—to err is but human, to repeat them too often, becomes force of habit. The man who makes mistakes is the man who does the work, the fellow who gads around all day, takes no chances.

Then there is a man who is looking out of the window or across the shop, when the foreman is explaining a job to him; this man usually makes a trip or two back for further explanation, or spoils the job generally. Then again there is the shop comedian, who is bound to entertain his bench mate, with a line of threadbare, motheaten jokes and stories the live-long day; such a man usually has a vacuum in his head and jobs of importance are kept out of his reach, hence he is known always as cheap help.

Then comes the genius fellow, who can do a machine job, a bench job, and makes himself generally useful, but when there is a good hard detail at hand, he will fight shy and say he is no office man. Then there is the educated man who wishes to stand as the shop encyclopedia; he is so methodical and scrapodously (we don't know him; do you? Ed.) exact, he never keeps up with the hustlers.

Then comes the shop dude, who has a collar so high, unless you would get a front elevation of his face, it would take a Sherlock Holmes to establish his identity. This kind of a Willie manages by cunning and pride to get the clean

jobs and usually stands in with some foreman. Then we have the tool granny; this dub has a kit of nickel plated tools. After every job and often in the middle, he wipes them off, sterilizes them; he has three or more oil stones for his edges, hones, etc. This fussy creature is never picked out to do a quick, cash job, on account of his fussiness. Now, we have the fellow who has only a few tools, of an antiquated type, who can get out a job in jig time and do it well, too; such a fellow is always ready to tackle a job and is sure to give satisfaction.

Then comes the full fledged tool grafter; he gets as much wages as the rest and is always gadding from man to man, borrowing tools. This duck is a full-fledged cuckoo. Then there is a tool thief; at times the men in the shop loose tools, nail sets, bits, rules, etc. This man may some day corner the hardware market; who can tell?

Then comes the man known as the putterer; he fusses and fumes over a job until the foreman is about to have hysterics, then he will drive a few brads and starts to meditate again; this species of a mechanic has neither push nor conscience. Then comes the official knocker, who continually knocks the foreman from either jealousy or just common grouch.

Now, then, there is the good mechanic who puts his mind on his work, keeps his tools in an ordinarily fair condition and does as he is told. This fellow likes to be agreeable and some day gets higher. Although I have seen men that had all the good qualities but would have some mulish trait, that would hurt many of the others. For instance, I have known men that were so firmly cemented to giving 9 hours and 9 hours only for a day's work, that if the whistle blew when they raised their hammer to drive a nail, they would go away and leave the hammer in the air.

Now many men have some of the above traits and many have them changed around to make a different combination. So much for Mr. Mechanic. I know how it goes all right, for I am supposed to be a mechanic, and my description is in the above; take an adjective from each man; that's me.

WM. C. JASBURY.



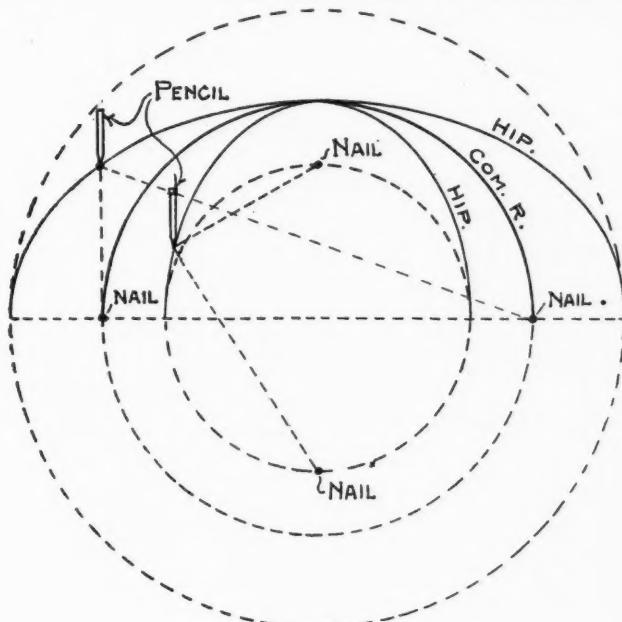
To Discribe an Elliptical Hip

To the Editor:

Bement, Ill.

I am a recent reader of the AMERICAN CARPENTER AND BUILDER, but so far I appreciate it greatly.

I was particularly interested in Mr. Young's question and Mr. Woods' answer to same, in regard to a hip for a dome.



Laying Out Elliptical Members

Since reading the article, we have built two circle ceilings over a recess 7 feet 2 inches by 5 feet 2 inches. The curves start at the same height and intersect at the same height. The 7-foot 2-inch sides were made a true circle. The 5-foot 2-inch sides were made elliptical with the same rise as the 7-foot 2-inch circle. Patterns for the hips were gotten by the inclosed method which I consider easier and quicker than any method I have seen.

Take a piece of string the length of the major axis; use small nails in the ends and set them the same length apart as the minor axis. Use a pencil and take up the slack in the string and swing from one side to the other, as indicated in the sketch.

L. S. PROCTOR.

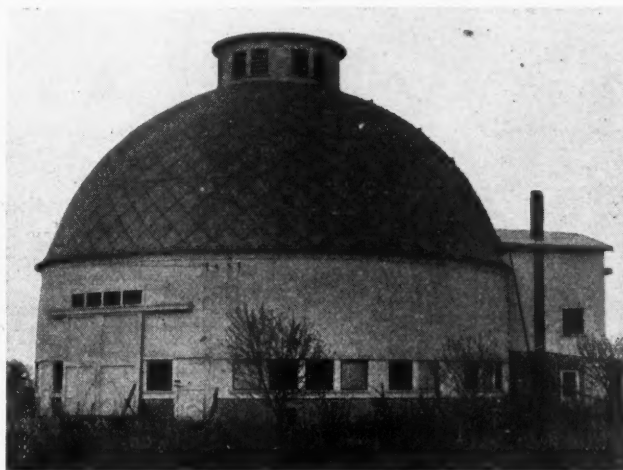


Building a Round Barn for Economy

To the Editor:

Skowhegan, Me.

J. L. Dean of Winslow, Kennebec County, Maine, has proved to his own satisfaction at least, that a round barn can be built cheaper than a rectangular one, is of more service and saves time.



Round Barn With Dome Roof at Winslow, Me.

This barn was planned by Mr. Dean with the help of the Illinois Experiment Station. He reckons that it cost complete about \$5,000, but he says that he employed men as carpenters that had never built a structure like it before; and of course this meant extra labor and expense. He believes, with the knowledge they have now, it might be built for \$4,500.

The barn is 50 feet in diameter. The tie-up runs around the outside of the barn, the animals facing inward. The stock is fed with hay through individual trap doors from the hayloft, dropping into the lower floor in front of the cattle. There are now thirty five head of cattle in the barn, although the capacity of the barn is sixty head of cattle.

The tie-up is of concrete. A silo of the same material goes to the second floor; from there to the top, the silo is made of cement blocks. The underpinning of the barn is of cement and goes into the ground six feet. One of the advantages according to Mr. Dean is that the stanchions have no air space underneath, and for this reason the cattle in winter are kept warmer.

The silo is 12 by 48 feet. Overhead litter carriers run around the barn back of the cattle and pass out onto a projecting track beneath a shed; where they are dumped into a manure spreader and as this is filled, it is immediately hauled into the field. Sometimes in the winter the manure is dumped into a concrete bin and later hauled out.

The hay is carried into the loft by a grab fork and on a circular track that runs in the roof completely around the barn. The entrance to this upper floor is over the milk room of poured cement.

Mr. Dean devised a ladder that attaches onto a track at the peak of the barn where the ventilator is, and comes to the eaves and can be run around the entire roof of the barn for anything that might demand the attention of one on the roof.

The barn is boarded with matched fir. The roof is also of matched boards and covered with asbestos paper roofing.

J. E. TAYLOR.



Big Gothic Roof Barn

To the Editor:

Oak Harbor, Wash.

I see so many pictures of barns in your paper, I thought I would send you a couple of pictures of a barn I have planned and built for Mr. J. A. Neil. It is 60 feet by 140

feet. The first story is of concrete. Will have concrete floor throughout and will be equipped with patent stanchions.

I have been reading your paper for the last six or seven months. I like it fine and you may be sure I'll not miss a copy of it.

OTTO VANDYKE.



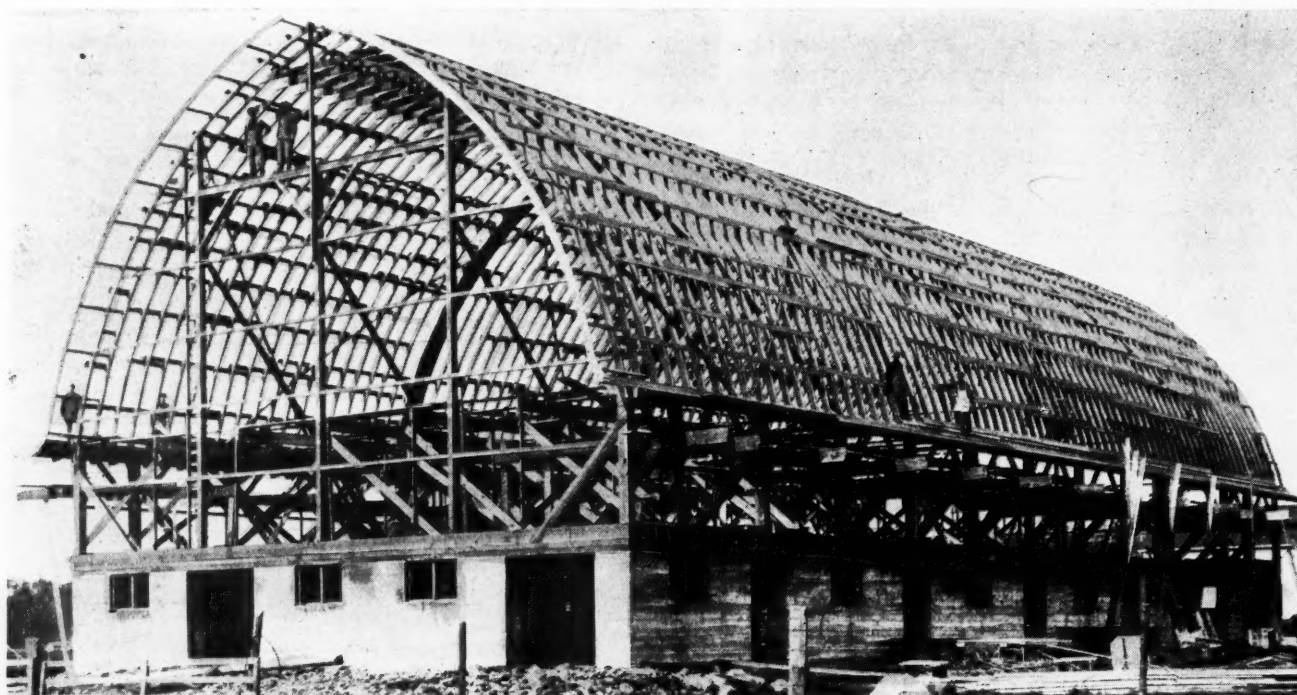
Wants Stair Framing Details

To the Editor:

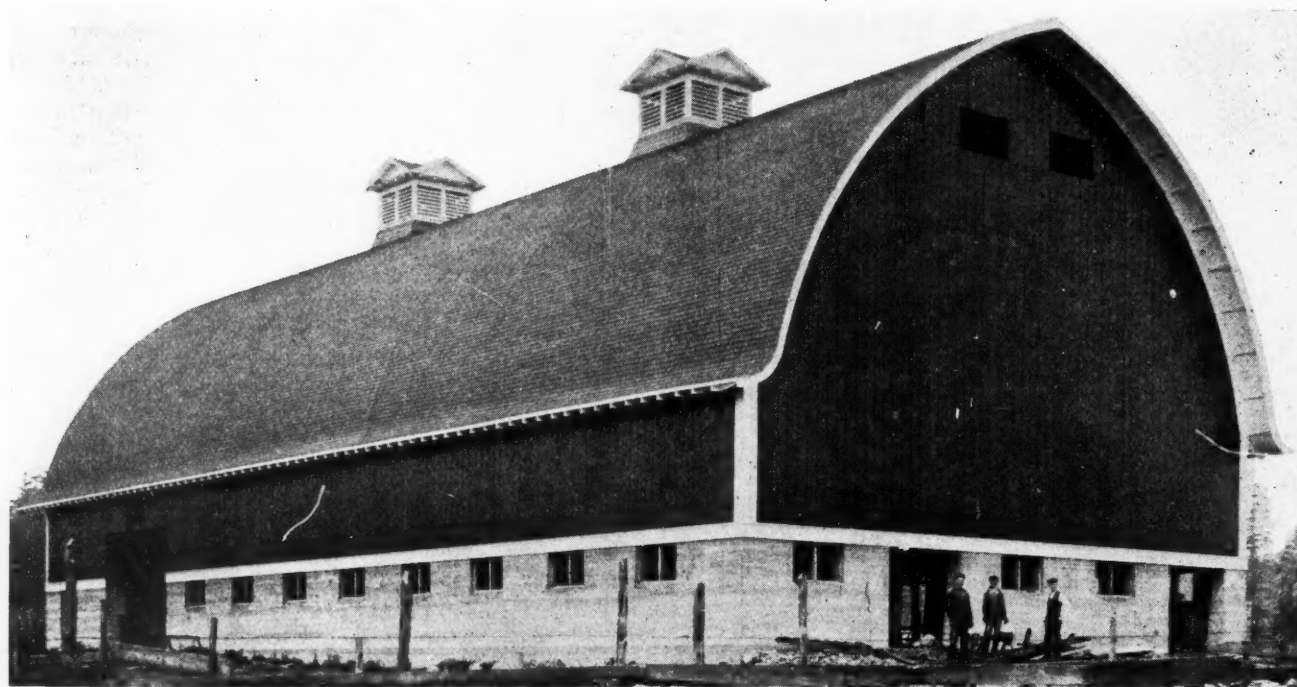
Sheffield, Pa.

I wish some good man on stair work would give some details of the rough framing of stairs; open stairs with platform and the manner of treating newel post so it won't sag at the corner. It would be a very interesting study to us country carpenters.

F. A. STONER.



Van Dyke Barn in Course of Construction Showing Bracing



Barn 60 by 140 ft. with Gothic Roof Planned and Built by Mr. Otto Van Dyke of Oak Harbor, Wash.

Ventilating Public Buildings

To the Editor:

Summitville, Ind.

There is a subject—viz.: Ventilation—that is occupying the minds of many who are interested in public buildings, such as school houses, etc. I also feel interested and would like a little information.

The late laws enacted in Indiana require that the light admitted into a school room must be from one side only, and the glass area must equal one-sixth of floor area; also that "foul air flues must be of ample size to withdraw the foul air from the room at a minimum rate of 1800 cubic feet per hour for each 225 cubic feet of space in the room (the amount of cubic feet allotted to each pupil) "regardless of outside conditions."

Now, what I would like to know is this: What would be the size of a flue that would do this work if gravity alone was depended upon say for a two-story, four room building, each room 24 by 30 feet (by 13-foot ceiling)?

Also what size would the flue need to be in case artificial means were used, like a fan in flue, or heat. Also size and location of fresh air ducts so placed as to avoid a draft in the room.

C. B. SPIERS.

Answer: The legislation quoted in regard to the light in the schoolroom would seem to have been enacted only to prevent cross lights from falling on the pupils and to insure a proportionate amount of window surface in each room in order to make artificial lighting unnecessary; this does not effect the ventilation in any way.

The foul air flues which are mentioned are what are commonly termed "exhaust flues" or "vents" and as these are usually made from two-thirds to three-quarters of the capacity of the fresh air supply ducts it would follow that if the law required 1,800 cubic feet per hour per pupil that this

is 66 to 75 per cent of the fresh air supply or $\frac{1,800}{.75 \text{ or } .66}$ which

equals 2,400 to 2,700 cubic feet per hour per pupil.

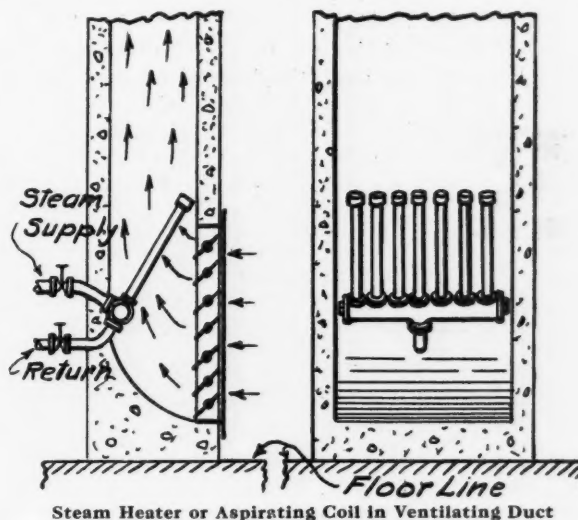
If gravity alone were depended upon, I do not believe it would be feasible to attempt to move this quantity of air through vent ducts except possibly in extremely cold weather. Gravity ventilation, as its name implies, operates solely by the difference in weight of the air in the vent flue and the outside air. In extreme weather when the outside temperature is, say, at zero, and the temperature in the school room at 70, the difference in temperature between the air going up the vent and the outside is at least 70 degrees, but as the outside temperature rises, the difference in both the temperature and weight becomes less and less until 70 degrees is approached at which point there will be no tendency in the vent flue to rise as there is no difference in the temperature and consequently no difference in the weights of the inside and outside air.

It would be even possible to get reverse currents blowing back down the vent flue as the outside temperature approaches 70 and at any time when the outside air is warmer than the inside temperature a reversal would be almost impossible to prevent. As a usual thing gravitation alone is not depended on in a ventilating system handling such large quantities of air, owing to the fact that the velocities in the vents are so low as to require ducts and flues of a prohibitive size; either of two means of accelerating the flow in the vent flue is usually adopted; the cheaper (where steam heat is available) is to use a steam coil to heat the air.

In a case of this kind the velocity in the vent depends upon two things; first, the difference in temperature maintained between the vent air and the outside air; and, secondly, the height of the flue. On the average with the steam coil in the flue the velocities range around 340 feet per minute for the first floor, 280 feet per minute for the second floor, and 220 feet per minute for the third floor, with a difference

in temperature between the outside air and that in the flue of about 25 degrees. The heating coil, commonly called an "aspirating coil," is placed in the bottom of the flue somewhat as shown in Fig. 1, the coil being as twice as long on the slant height as the horizontal distance across the flue. Under these circumstances the efficiency of the coil will run around 400 B.t.u. per square foot and the answer to the problem of a two-story four-room building with each room 24 by 30 feet by 13 feet ceiling would be as follows:

24 by 30 by 13 equals 9,360 cubic feet, which at 225 cubic feet per occupant gives about 42 pupils. If we assume an hourly fresh air supply of 2,400 cubic feet per pupil or 40 cubic feet per minute there must be 1,680 cubic feet of fresh air delivered every minute into each room which at a velocity of 1,000 feet per minute in the hot blast supply duct will require a duct of 1.7 square feet cross sectional area and the vent duct will handle 1,800 cubic feet divided by 60 or 30 cubic feet per minute per pupil which is 1,260 cubic feet per minute total. As this building is only two stories high, the velocity will be 280 and 220 ft. per minute for the first and second floors respectively or $4\frac{1}{2}$ square feet cross sec-



tional area for the first floor room and $5\frac{3}{4}$ square feet for the second floor.

At 400 B.t.u. per square ft. efficiency on the coil the

$$\frac{1,260 \times 60 \times 25}{50 \times 400}$$
 required heat will be _____ degrees rise equals 94

square feet required area of the steam coil in each room. The above figures are based on the assumption that a fan is used to supply fresh air to the rooms through a hot blast system as the air going out of the vent flues must come from somewhere and it would be impossible to get this amount of air from the outside through natural leakage; but if an exhaust fan were connected to the vent duct from each room, or if the four vents were connected together and then carried to an exhaust fan, the velocities would be greatly increased running as high as 1,000 feet per minute or over in which case the area need only be about $1\frac{1}{4}$ square feet for each room regardless of whether it be on the first or second floor.

The best place for the inlet registers would probably be about 8 feet above the floor so as to clear the blackboards and above the headline. The outlet or vent flue will give good results if placed at or near the floor and approximately below the inlet. It might even be well in a room of this size to split the connections into two or three parts so as to distribute the air better locating say three fresh air supply registers, one at each end of the room and one about the middle, with similarly located vent connections at the floors.

H. L. ALT, M. E.

Experiences and Opinions Wanted

To the Editor:

Preston, Iowa.

A friend of mine asked my advise about a house built of hollow tile blocks, and plastered over with stucco. I have had practically no experience with such a house and could not tell him much about it. Will you give your opinion in the next paper and if you like, you might have it discussed by the brothers.

LYMAN F. MARVIN,
Contractor and Builder.



Architect Wants Samples

To the Editor:

Winston-Salem, N. C.

I have moved my offices from Salisbury, N. C., to the above address, Maston Bldg. I would like to receive manufacturers' samples, etc.

J. S. ZIMMERMAN, Architect...



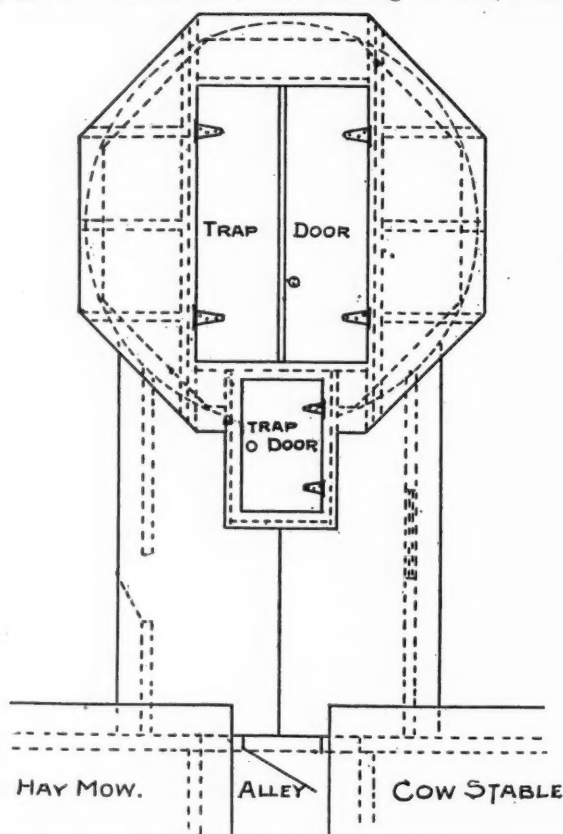
A Flat Roofed Silo

To the Editor:

Highland, Mich.

Two years ago I put a flat roof or deck on a stave silo. This deck had two large trap doors over the silo and a small door over the chute. This silo can be packed full to the very top and when full the men packing the silage are outside and have only to close the large doors and descend through the small one and hook it from below.

There is a room about 7 feet square between the silo and barn and the chute extends from the roof of this room to top of silo. Dotted lines show framing of deck, which is



Plan View of Silo Feed Chute and Stable

of 2 by 6 inches placed on top of staves and extending out to take the fascia, which is also a 2 by 6-inch dressed. A $\frac{7}{8}$ by 3-inch beveled strip serves for a crown mould and the deck boards project $1\frac{1}{2}$ inches all around. A 6-inch board cut between deck joist serves for plancier and keeps the birds out.

If the owner of the silo I described in the August number had had a silo like this, he would not have made a prisoner of himself. It is a good joke, so I will tell it. His silo

stands less than 2 feet from the barn and the chute is not very large, but has a door at the bottom, leading to the feed alley. The first time he wanted to feed silage, he closed this door behind him and climbed into the silo and carefully cleaned off all the litter and spoiled stuff on top and then found that he had filled the chute above the door, so that he could not get out. He stayed there until his wife, getting anxious because he did not come to dinner, finally started for the barn, some distance away, to search for him. Before she got there she heard him pounding with his fork handle to attract attention, and so she found him. She had to call some neighbors to dig him out.

A. GONNE.



Durable Wood Face Mallet

To the Editor:

Burgessville, Ont.

I noticed in the July number an idea for a wood face mallet made from pipe coupling. This is sure some idea; but think I can go one better. If he uses this one for hard work, such as barn framing, I fear the handle would soon cut off. Now I made a pattern and had some cast, which have hollow ends, $\frac{3}{4}$ inch deep to receive wood faces, and a mortised eye for handle. These have stood the test for some five years very well.

DAVID CASTER, Contractor.



Wall Construction in Winnipeg

To the Editor:

Winnipeg, Manitoba, Canada.

I saw in the July number, a question by P. H. Lebak, Milroy, Minn. (Which is the best way to build a house? Board it up inside and outside, or just board it up on the outside and use back plastering on the inside and lath on the 2 by 4 studs?)

In your reply you stated that you had never seen or heard of a job handled in this first way. Now I have worked in thirty-five states in the United States and never saw it done there. At present I am working my way through Canada and in this beautiful city of Winnipeg, Manitoba, I find that the frame houses are all built on this system. Boarded on the outside, then paper and weather boarding; boarded on the inside, then papered, then $\frac{7}{8}$ furring strips 16 inches on centers and lath and plaster on that. Of course, the winters are slightly colder here than on Michigan Avenue, Chicago, being from 30 to 55 degrees below zero most of the winter.

J. DUNCAN.



Best Angle for Sharpening Scrapers

To the Editor:

Idana, Kans.

There is one thing that I would like to see explained in your columns and I feel sure that it would not only benefit me, but ninety-nine out of a hundred carpenters who have finishing to do; viz.: the correct way to put a keen edge on either a cabinet scraper, a scraper plane or a floor scraper; also the best inclination to hold the tool in order to do good work. The majority of carpenters just make a try at it and more often miss than hit it.

JAS. R. JAMISON.



Troubled With Rain Blowing Under the Window Stool

To the Editor:

Solon, Iowa.

I have a question to ask of some of the brother carpenters, —what is the best way to prevent water from blowing in under the window stools. The way we build them, the studs are $1\frac{1}{2}$ by $2\frac{1}{2}$ inches wide, which makes the stool lap on the window sill $1\frac{1}{4}$ inches.

The lumber we get nowadays, is not seasoned very well and the bottom sill usually shrinks away from the stool.

The windy rains will blow the water under, making the plaster wet under the windows. How is the best way to prevent this?

J. W. HARTMAN, Carpenter and Builder.

Cornice Construction in Haiti

To the Editor:

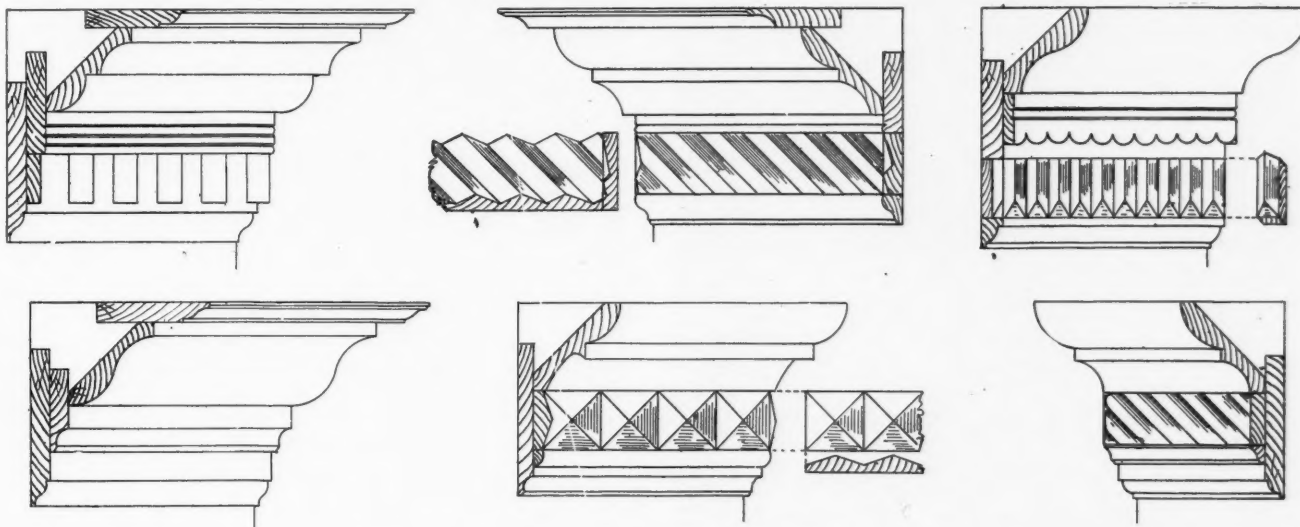
Petit Goave, Haiti.

As a subscriber of your valuable magazine, I am sending you some moulded cornice work, such as used in this country. The mills here turn out only prepared matched boards and rough lumber for building construction. The mouldings are imported from the U. S. A. There are no architects or engineers here to plan the work, so the planning is left to the owner and carpenter to plan as best suits their fancy. The

illustrations and plans of various designs and sizes. I know of no such book of plans yet I feel that there must be such.

Everyone seems to think that their boat or bath house must look like the other fellows. I want to be the first to depart from that idea. I have found that it pays to introduce something new occasionally even if the public doesn't take kindly to it at first.

I have made ideas gleaned from your columns pay many times over the subscription price. Success to the AMERICAN



Elaborate Cornices Are Still the Thing in Haiti—These Were Made by Hand by Our Subscriber

cornices are mostly hand made and these that I am sending you are my own design; I thought they may be of some use to those far away from modern planing mills; that is my reason for sending them to you, and hope they may prove of interest enough for a place in the paper.

Success to the AMERICAN CARPENTER AND BUILDER and its subscribers.
S. A. WILLIAMS.

**To Straighten Out a Saw**

To the Editor:

Oakland, Calif.

Very frequently it happens that a saw gets curled or buckled by meeting with some obstacle which causes the metal to stretch on one side, the consequence being that the saw is neither straight or true. Quite a number of good saws gets spoiled by using them with hardly any set in wet lumber. It is advisable when cutting up lumber which is damp to use a little more set than is used under ordinary circumstances.

A good way to take the curl or buckle out of a saw is to lay the blade on the floor with the curled or buckled side upwards, grasp the handle with both hands, and set your foot on the blade with foot nearer the heel or handle end just where the buckle starts; keep your weight on the saw and pull the blade from under your foot. The saw can be twisted in any direction to get it straight, so it will be apparent to all how to act to suit the circumstances.

NEIL MCCALLUM.

**Wants Boat House Designs**

To the Editor:

Auburndale, Fla.

Our town is situated on a lake of considerable size and as there are a number of motor-boats I am frequently called upon to build houses for them. Now there has been a sort of general plan of construction followed out in the building of all of them. There is too much sameness about them to suit me. I want you to help me find a book containing

CARPENTER AND BUILDER for that means success to many of us following the trade.

C. E. TERRY.

Answer: In June 1909 we published an illustrated article in the AMERICAN CARPENTER AND BUILDER showing a number of photographs of boat houses. So far as we know there is no book of plans of this kind.

Perhaps some of the other readers of the AMERICAN CARPENTER AND BUILDER have some good ideas and designs for boat houses. If so send them in.

EDITOR

**Utilizing the School House Roof**

To the Editor:

Los Angeles, Cal.

A Los Angeles school building is furnished with a canopy of light frame construction that forms an ideal study room, with plenty of light, fresh air and other conditions that make for good work. The building is thus equipped with an

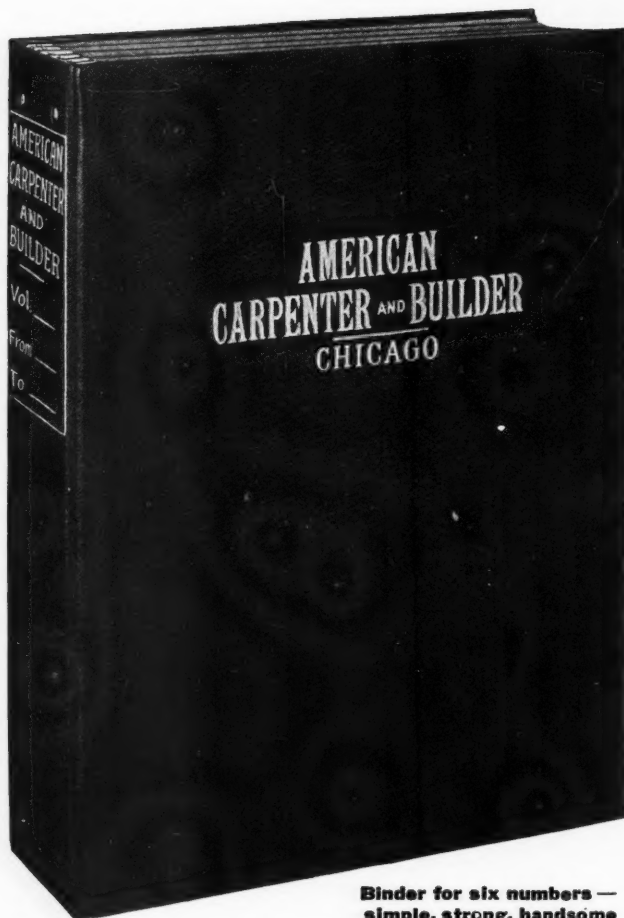


Utilizing the School House Roof

additional large room at a very slight cost. The idea of open air study rooms is gaining favor in the west, where climatic conditions are favorable, but it could be adopted, with modifications, to all parts of the country. C. L. EDHOLM.

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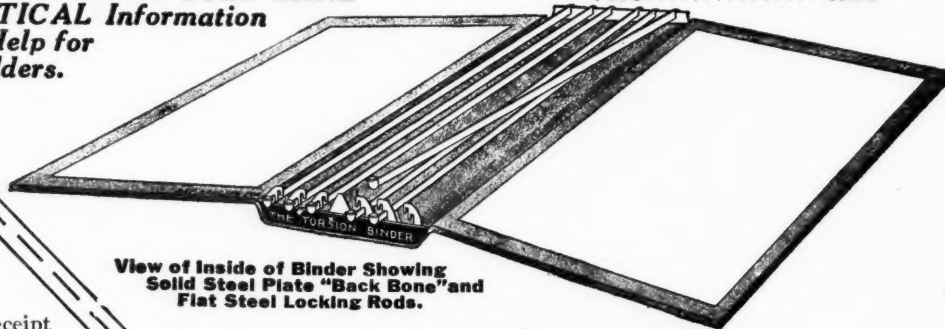
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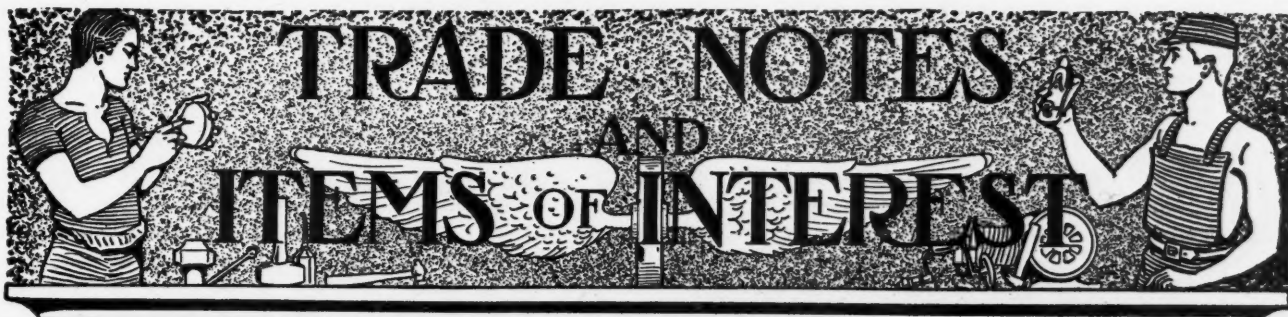
POSTAGE
PREPAID



View of Inside of Binder Showing
Solid Steel Plate "Back Bone" and
Flat Steel Locking Rods.

Each one of these rods
is slipped through the middle of a copy of the maga-
zine and is quickly and easily snapped fast. There
is no punching, cutting or mutilating whatever.
Each copy is bound in snugly—yet can be
opened absolutely flat. Keeps your maga-
zines clean and fresh—and right where
you want them for ready reference.

While They Last at These Prices—Hurry, They Are Going Fast



Through this department the editors aim to keep builders, contractors, carpenters and architects in touch with what their friends, the manufacturers, are doing for them in new or improved tools and machinery, methods and materials—pertaining to building. Items for these columns must have real news value; they are offered here as interesting information for our readers; they are not advertising. No matter will be printed here simply because some advertiser wishes it. Likewise, no matter will be excluded simply because the article described is not advertised in this magazine. Suggestions for the betterment of this department are requested of our readers.

Chicago Hardware Market

Chicago is the greatest distributing center for hardware in the United States—or for that matter in the world, says a committee of the Chicago Association of Commerce, which has been investigating this subject.

It is the center of the largest hardware consuming section of the country—a section where new buildings are going up, where industries are multiplying, where business centers are expanding and shops increasing in number—and these developments mean increased consumption of various forms of hardware, builders' hardware, farmers' and mechanics' tools, store fixtures, wire goods and other articles, comprising all the numerous classifications coming within the hardware subdivision.

The development of the industry in the Central West has been most marked during recent years and while Chicago does not lay claim to the position as a hardware manufacturing center, that it holds as a hardware distributing center, its gains in manufacture, both in volume and variety of products, have been an important feature.

Chicago's wholesale business in hardware totals \$30,000,000 per year.

Its manufacturing output of hardware is \$17,500,000.

Its retail trade in hardware yearly represents \$8,000,000.

These figures are for shelf hardware and do not include heavy hardware or what is generally known as steel products.

Approximately \$7,000,000 of the wholesale trade represents builders' hardware, commonly termed house trimmings, such as locks, hinges, bolts, etc. In this general line there are sixteen wholesale builders' hardware stocks in Chicago.

Chicago sells annually 4,960,000 door locks and hinges, sufficient to hang the doors of more than 400,000 residences or to provide houses for a city of 2,500,000 population.

In this as in other hardware lines Chicago is a distributing rather than a manufacturing center. Considerable hardware is manufactured in and near Chicago, however, the manufacturers specializing rather than generalizing.

In the manufacture of tools, while the greater number of carpenters' and machinists' tools, especially, still are manufactured in the East, Chicago is represented by makers who produce articles of exceptionally high grade.

The Solar Grand Gas Heater

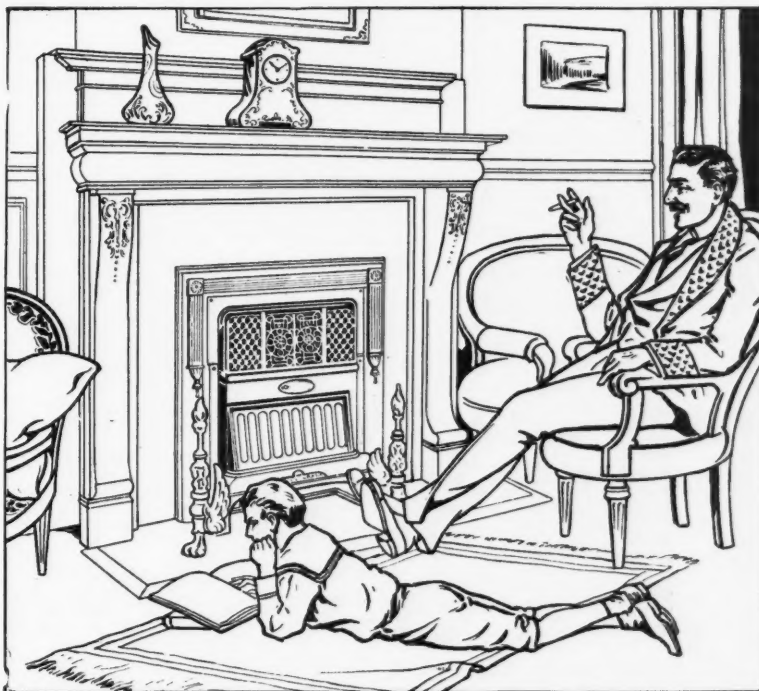
A splendid gas grate that is just being brought to the attention of our readers is manufactured by the Sanitary Heating Co. The Solar Grand is superior in so many ways to the ordinary gas grate that a brief mention of its principal features will be interesting.

In the first place, no chimney or flue is neces-

sary as the perfect combustion does away with all odors and gases. Instead of the usual yellow flame, it operates with a white flame, and by means of fractured crystals and ruby glass the illusion of a coal grate fire is maintained. The combustion chamber is closed, thus preventing the women's or children's clothes from coming in contact with the flames. Perhaps the greatest point of all is the economy in operation. Figuring gas at the rather high rate of one dollar per thousand cubic feet, the consumption of the Solar Grand for one hour would not amount to over three cents' worth of gas, and at that it will heat three thousand cubic feet of space even in zero weather. This is largely due to the fact that the Solar Grand is not only a heat generator but is a heat circulator as well. A warming chamber is also provided which will prove a mighty handy thing in the dining room for keeping various victuals warm until served.

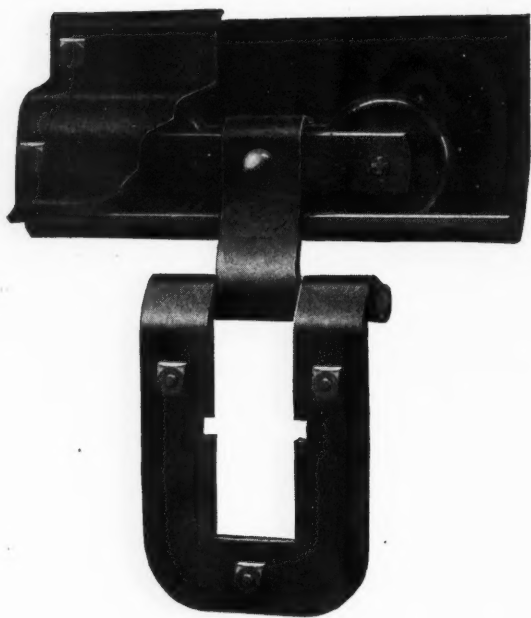
There are many other points of excellence about this heater which perhaps it is not necessary to mention at this time. Suffice to say, it is a fine ornamental grate, and both in decorative value and heating properties, will supersede the open fire place.

The price of the Solar Grand is consistently reasonable and our builders will find a vast amount of pleasure in reading the manufacturer's descriptive matter. The Solar Grand is an excellent gas heater for your own home or the homes you are building so write the Sanitary Heating Co., 233 37th Street, Brooklyn, N. Y., to give you a more complete description.



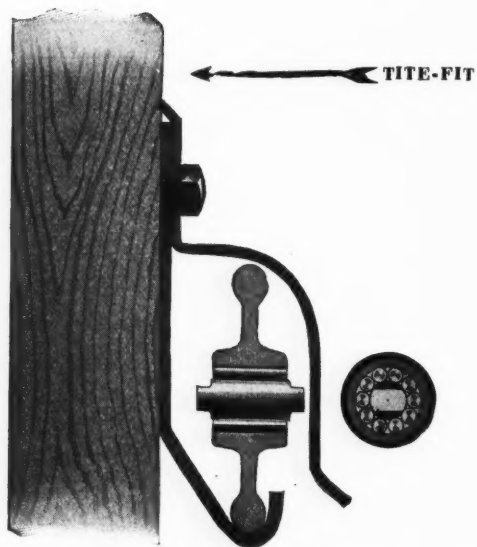
Solid Comfort in the Home Around the "Solar Grand"

THE IDEAL For Sliding



No. 77 Storm Proof

The No. 77 Storm Proof Hanger has two large wheels in tandem, equipped with steel roller bearings. Equalizing pin in center of drop strap distributes load equally to each wheel. Flexible Hinge joint. Axles and rivets galvanized to prevent rust. Packed one pair in a box with all necessary bolts, lag screws, etc.



Are you satisfied with and rail and other doors that you have they always been satisf tomers?

Hangers and Rail that will give such satisfaction that it to return to the job repeatedly are not the kind for you to If you have been having trouble *and Rail*. They run easy, weight, in fact they are a com you cannot afford to overlook. job. They will insure both faction and peace of mind.



No. 18 Stay Roller

Here is a strong, sturdy Stay Roller with extra wide space between screws giving unusual bracing strength. The wheel has rounded top and will not clog with dirt. It is adjustable also.

National Mfg. Co.,

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

EQUIPMENT

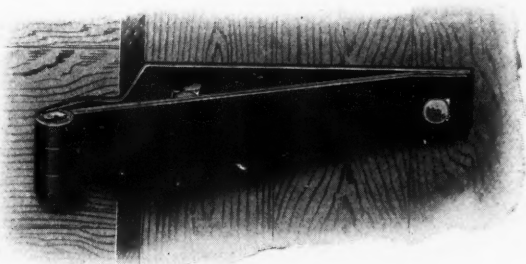
Barn Doors

the barn door hangers equipment for sliding used in the past? Have factory to your cus-

not carry their load easily and will not be necessary for you to put them in running order use.

try **Storm Proof Hangers** are easy to attach, carry great plete, satisfying combination

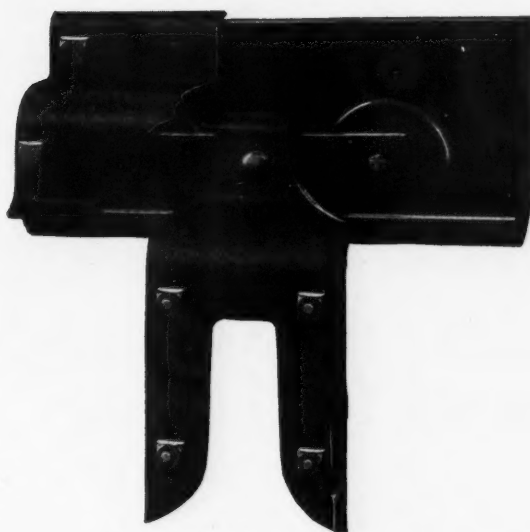
Try them on your next barn you and your customers satis-



No. 16 Door Bumper

This bumper is something new. It is made of steel and will save you the time required to make an inferior one of wood. Lag screws are furnished with it and when placed on the building three inches above center of door will last as long as the door. It holds the door close in against the building, too.

Sterling, Illinois



No. 66 Storm Proof

The No. 66 Storm Proof Hanger is built on the same heavy lines as the No. 77 and is similar in every respect except the flexible hinge joint. It is a rigid hanger. This style is also packed one pair in a box with all necessary bolts, lag screws, etc.



Storm Proof Rail

The Storm Proof Rail does not require any housing as it fits close to the building forming a perfect water shed. Bird Proof, too. Requires no brackets. Great carrying capacity. It will save you the time and lumber necessary to build a housing of wood. The best thing yet for you.

National Mfg. Co.,
Sterling, Ill.
Gentlemen:

Please send me your catalog and booklet, "Sliding Barn Door Equipment." My dealer's name is

Yours truly,

1913.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



A Roofing that Advertises You and Your Business

One of the best assets a builder, contractor, carpenter, architect can have is a reputation for specifying and recommending an article of merit. It proves, more than anything else, the utmost consideration of his clients' interests. It adds to his prestige. It brings him more business.

Too often has the roof been neglected, the owner disappointed. And to take care of your every need, your every demand for a roofing not only durable, efficient and economical—but also so attractive in appearance that it compels admiration—we have perfected a modern, flexible shingle roofing.

This modern roofing

Sal-Mo Shingles

gives a neat and attractive appearance which cannot be secured with wood shingle, slate, tile or other roofings. It marks a step in advance of all roofing materials. It provides building men with many "talking points" that cannot fail to impress the home builder.

In the first place, when you specify Sal-Mo Shingles, you are offering a roofing

Made in Durable Colors from Natural Rock—Red Granite, Green Slate, Garnet Brown and Red Slate

These colors are not painted on the roof. They can not wear off or fade. The colors are a part of the roof—the material of which it is made.

Besides this, you are specifying a roofing that—

- is absolutely water-tight;
- never requires coating or painting;
- offers best kind of fire protection;
- is cheaper than good wood shingles, slate or tile roofings;
- keeps building cool in summer, warm in winter;
- does not attract electricity;
- is adapted to all climates;
- does not require a re-inforced under-roof;
- has no gravel to wash off and clog drains;
- will not crack, warp, split or curl up;
- will save its cost in reduced insurance rates; and

Is Guaranteed for Twelve Years

But more than this, Sal-Mo Shingles are easier to lay. You'll not find a single variation from size—8 in. x 12 $\frac{3}{4}$ in.—in a thousand shingles. If the workman starts right he finishes right. Laid 4 in. to the weather, Sal-Mo Shingles give three thicknesses of real roofing, thus adding to durability and efficiency.

Our Free Book, Samples and Special Introductory Offer

will be sent upon postal request. Write us now and learn how, if you specify a Sal-Mo Shingle Roof, it will add to your prestige and bring you more business.



Sall Mountain Asbestos Mfg. Co.

Chicago New York Scranton

Also Factories at Rockdale, O.,
Porter, Ind., Gainesville, Ga.

Gravel Handling Machinery

Illustrative of their rock-ore and gravel handling machinery, is a pleasing little catalog being mailed by the T. L. Smith Co., 1138 32nd St., Milwaukee, Wisconsin.

Our people who are in any way interested in the gravel business will derive benefit from reading this book, for it contains late and authoritative information on the equipping of gravel plants. Worth special notice are the double roller chain elevators and the portable bins,—two new pieces of equipment recently added to the already large list of their manufactures. The T. L. Smith Co. have worked up an enviable reputation for the excellence of their machines and anyone who invests their dollars in them may feel certain of getting full value. Smith concrete mixers are also very favorably known. If you want this recent book ask for Catalog 252.

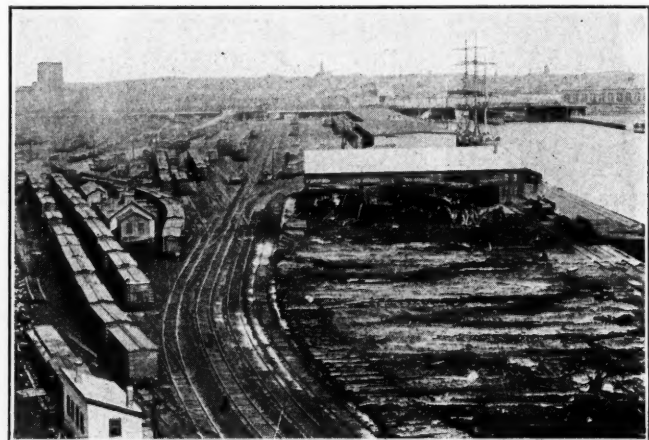


Asbestos Roof Stops Conflagration

The ability of asbestos roofing to resist fire and check the progress of a blaze was again demonstrated by a fire which broke out in one of the sheds of the Export Lumber Company, Charlestown, Mass. The blaze quickly gathered headway and in a very short time reached such gigantic proportions that the fire companies, with all their modern fire-fighting devices were temporarily powerless to check it.

Due to the high wind blowing at the time, sparks and burning embers fell on the highly inflammable roofs of buildings for a radius of a quarter of a mile around. The result was a score of small fires that gradually grew until several acres were ablaze at one time.

The fire burned its way from the sheds of the Export



Plant of Export Lumber Co., Charlestown, Mass.

Lumber Company to a large storehouse owned by the same concern. This storehouse, which is the white-roofed building shown in the illustration, is the one covered with asbestos roofing. Owing to the fact that falling embers and sparks had no effect on this roofing the fire department was enabled to concentrate its energies on the advancing wall of flame, with the result that the fire was gradually gotten under control.

The roofing that so effectively put a stop to this conflagration is known to the trade as J-M Asbestos Roofing. It is manufactured by the H. W. Johns-Manville Co., of New York.

The construction of this roofing is unique, as it is composed of a felt made from asbestos rock reduced to fibres. Layers of this stone felt are cemented together with Trinidad Lake Asphalt, the whole forming a roofing that is literally a sheet of flexible stone.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Write quick and save 40% to 60% on your Fall Building

Best Lumber Ever Used

"Everything checked from the car correctly. My carpenters claim the material is the best they ever put up. Several of my friends and neighbors have inspected my lumber and all are very much pleased."

E. P. Vanderhoef,
Hampden, N. Dak.
June 8, 1913.

Never Before Saw Such Nice Lumber

"The lumber was the best I ever saw. The carpenters looked at it and said they had worked at the trade over 12 years and never saw as nice lumber before. I have saved over a third in price."

Joe Weber,
Grinnell, Iowa.
May 13, 1913.

Better Lumber and \$200 Saved

"You saved me a little over \$200 on the bill and I got better lumber than I could have got here. I also sent the bill to different firms in Chicago, but you were cheapest and I think have better lumber. I can heartily recommend you for square dealing."

Fred W. Fosha,
Worthing, S. D.
May 19, 1913.

Best Lumber That Ever Came to Town

"I have received my car of lumber and I'm well satisfied. My carpenter thinks its the best car of lumber that ever came into Marion. I have saved from two hundred to three hundred dollars."

Abraham Duerksen,
Marion Junction,
South Dakota.
May 21, 1913.

No doubt you're figuring right now on some jobs to be erected this fall. Why not save 40% to 60% on the lumber and mill-work, and besides provide material of better quality? Carpenters say our lumber beats anything they ever saw for quality. Every day we get letters like those quoted in the circles at the left. Nearly all mention also the big saving made. It ranges from \$75 to \$500, according to the size of the bill. Why pay tribute on all the lumber you buy to five needless middlemen?

Buy direct from our six mills—save middlemen's profit—get better lumber

We control thousands of acres of choice timber in the Pacific Coast States—all the cutting and logging, all the manufacturing of lumber and mill-work, takes place under one continuous operation, under one overhead expense. You get the benefit of this tremendous saving.

Five middlemen—wholesaler, jobber, commission man, salesman and dealer—get fat profits when you buy of your local dealer. No wonder lumber prices are high. Buying direct from us, you save 40% to 60% and get better materials.

Quick estimates by men of long experience

Your bill of materials will have the attention of high salaried experts, who have spent years in the lumber business. We promise you immediate attention.

Quick shipment

We maintain large stocks—have unequaled facilities for turning out any special work in quick order. Our rule is, "Shipments must go out within 24 to 48 hours after order is received."

Quick delivery

Seven railroads rush forward our shipments. Deliver them at destination within an average of two weeks. You always figure more than this time ahead. No reason whatever to keep you from saving 40% to 60%.

Satisfaction guaranteed

We guarantee every shipment to grade better than trust or combine standards. Money back unless satisfied. Send along your bills of materials or complete schedules and see what great savings we can make you. At least use the coupon and get our catalog and price list. Write today.

Silos at 40% to 60% Saving

If yours is a silo-using neighborhood, you can make a big profit selling Seattle Silos. They are clear fir and equipped with patented swinging doors.

Hewitt-Lea-Funck. Co.

408 Crary Building

Seattle, Washington

Hewitt-Lea-Funck Co., 408 Crary Bldg., Seattle, Wash.

Kindly send the following, with price list:

☐ Catalog of lumber and millwork. ☐ Special silo folder.

Name _____

Address _____

Business _____

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Weather Vanes

Of pleasing design and delightful variety are the building ornaments exhibited in the large poster circular distributed by Thomas W. Jones, 155 Maiden Lane, New York City.



Popular Style Weather Vane

Here are weather vanes, church crosses, bannerets, tower ornaments, etc., in endless variety gilded with pure leaf gold and at prices easily within anyone's reach.

Ornaments for buildings is not a new idea yet Mr. Jones has worked up some new designs so there is at least one appropriate for each style of building. Not only that, but he makes weather vanes according to any drawing or design submitted, does repairing, gilding and executes specialties in ornamental copper and brass from the architect's original ideas.

Have Mr. Jones send you this circular as well as his recent catalog of weather vanes.



The Yankee Level

The builder need be handicapped no longer in laying out foundations or running lines for his buildings; nor will he have to be dependent on an engineer to do this work for him.

The Frost & Adams Co., 31 Cornhill, Boston, Mass., have made an instrument especially for the use of the building trades; and judging from the number of orders being booked, the Yankee Level is very popular. All the little "hard-to-understand" things usual to the engineer's level, as well as

other unnecessary and expensive parts have been left off, making the "Yankee" one of the most moderate priced instruments marketed. It is an assured fact that the Yankee will level to 1/32 of an inch; and being designed and built by experienced instrument makers, can be relied upon to insure faultless work.

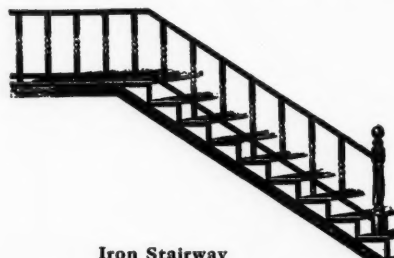
A line to the Frost & Adams Co. will bring you all the information you want regarding the Yankee Level and its price.



Ornamental Iron Work for Buildings

Whatever the builder or architect needs in the way of ornamental iron work can be found in the new catalogs of the Mack Iron & Wire Works Co., of Sandusky, Ohio. These people are manufacturers who have been developing business direct with the contractors and builders thereby saving them the middleman's profits. They have the best facilities for producing first class work at a reasonable cost.

Throughout these catalogs are shown excellent examples



Iron Stairway



Window Guard

in original designs of fine iron and wire work. Their range of products embraces window guards, grilles, balcony railings, gratings, fences, fire escapes, steel stairways, sidewalk

Quality Is
Economy

*We assume that it is not
Finishing Materials you
bargain for, but Finishes.*

Since you mean to provide Finishes—not simply to put on finishing materials—we have things to say.

Our Varnishes and Colors and Enamels, in the Finish, are **bargains** to the **owner** and to **you**:

To the **owner**, because they save him a lot of re-finishing costs: to **you**, because he is human, and talks to his neighbors about the things that please him.

See our Catalog in Sweets, 1913, Pages 1840-41.

The Varnish
That Lasts
Longest

Murphy Varnish Company

FRANKLIN MURPHY, President
Associated with Dougall Varnish Company, Limited, Montreal, Canada

NEWARK,
N. J.
CHICAGO,
ILL.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Get This Idea Fixed in Your Mind:

Right Kind of Lumber:

Right Kind of House.

After you get it fixed do not permit anyone to dislodge it. Here is one of the Right Kind of Houses:



Residence of W. D. Ellis, Ypsilanti, Mich.

This house was built of the Right Kind of Lumber—*Arkansas Soft Pine*. That is why it is the Right Kind of House.

You can build the Right Kind where you reside—just insist on being supplied with *Arkansas Soft Pine*. Mr. Ellis used no other kind, inside or outside, except shingles and stock doors.

Uncle Sam has delved into the record of shortleaf pine, of which that growing in Arkansas is recognized as the best, and after delving he said:

"It is impossible to determine exactly to what extent shortleaf pine was used during the colonial period and later. It is known, however, that shortleaf pine was an important commodity more than 100 years ago."

It is more important now than ever before, for the wise builder is recognizing its value and using it almost exclusively in building the Right Kind of Homes.

COMING: A treatise on "How to Build." Copies will be mailed upon request as soon as they are off the press.

Arkansas Soft Pine Bureau, ³⁰⁸ South Canal Street, **Chicago, Ill.**

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



"STAR" Ventilators

Known and Proven to be Best

The proof of the superiority of "Star" Ventilators is self-evident, as they can be seen in use on all kinds of buildings no matter where you go.

They provide the highest known speed exhaust—are most durable and absolutely storm proof.

The "Star" Fire Retarding Model shown above is the height of modern perfection. In case of fire the fusible link parts causing the damper to close automatically. This prevents upward drafts from fanning the flames.

"Star" Ventilators are made in the Standard Stationary Type (Glass or Metal Top) and the Standard Fire Retarding Type (Glass or Metal Top). Sizes to suit all purposes. Made in copper or galvanized iron.

Write for instructive ventilation booklet.

"COPMETL" OLD STYLE Roofing Tin



Upper half of roof is ordinary steel. Lower half is "Copmetl." They are of same gauge and were laid simultaneously.

Tests have demonstrated the unquestionable superiority of "Copmetl" Old Style Roofing Tin. Although new, "Copmetl" has attracted keen interest from coast to coast because of its uniform perfection and unrivaled wearing efficiency under all conditions.

The superiority of "Copmetl" lies in its base being scientifically alloyed with copper, which is then manufactured into the finished product by our famous Special Palm Oil Process.

Send for samples and prices of "Copmetl" and likewise our famous Merchants Old Method Roofing Tin and other brands.

Fire Prevention Engineering—Complete Automatic Sprinkler and Standpipe Systems

MERCHANT & EVANS CO.

Philadelphia New York Brooklyn Baltimore
Cleveland Chicago Kansas City Wheeling

Works: Philadelphia, Wheeling and Chicago



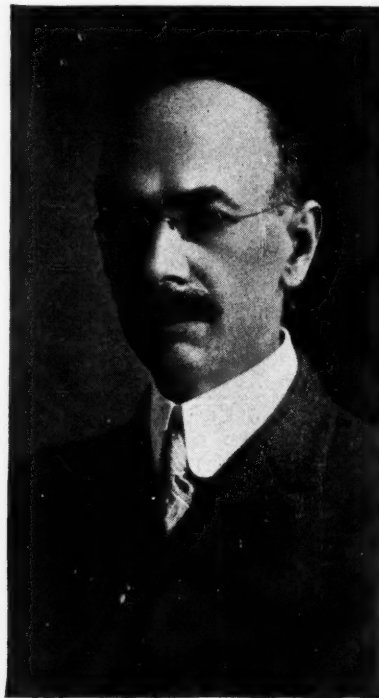
doors, fences, jail cells, and innumerable other things.

Full directions for measuring for iron work, complete descriptions and prices are given in the catalogs and as every building requires more or less ornament of the kinds manufactured by the Mack Iron & Wire Works Co., our builders will find such a complete list of products not only a handy reference but a serviceable guide in estimating and buying.



G. N. Jacobi Becomes Assistant Treasurer of The Peck, Stow & Wilcox Co.

At the last annual meeting of the directors of The Peck, Stow & Wilcox Company, Mr. G. N. Jacobi was appointed Assistant Treasurer. He has been for many years associated with this old-established concern, and through his former capacity as General Sales Manager enjoys a wide personal



G. N. Jacobi, New Ass't. Treas., The Peck, Stow & Wilcox Co

acquaintance among the Company's customers, and the hardware trade in general.

The Peck, Stow & Wilcox Co., located at Southington, Conn., New York, N. Y., and Cleveland, Ohio, have an unbroken history dating from 1819 and are well known as manufacturers of mechanics' hand-tools as well as the largest and oldest makers of tinner's and sheet metal workers' machines.

Mr. Jacobi will make his headquarters at Southington, where the Eastern Factory of the Company is situated.



New Starrett Catalog

The new catalog No. 20 that has just been issued by the L. S. Starrett Co. is probably the most complete catalog of mechanics' fine tools ever printed. Year by year the Starrett Co. has built up its catalog until this, the 20th edition, is a large book in itself. It contains some 320 pages (46 more pages than in No. 19) of interesting descriptions, illustrations, and prices for all kinds of tools for machinists, carpenters, draftsmen, engineers, chauffeurs, and other mechanics.

In addition there are many pages of data and tables such as metric conversion tables, decimal equivalents, weight computing tables, tapers and angles, wire gage tables, etc.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

CLAIMS TO SUPERIORITY which are BACKED by Buildings in all Parts of the World

The Monroe Building, shown here, one of the finest buildings in Metropolitan cities of the entire world, illustrates how the waterproofing problem is solved by Ceresit. Foundations of this big skyscraper, on the lake front, perfectly supporting 15 stories, are built of reinforced concrete and waterproofed with Ceresit. The basements are about 20 feet below the street level. Ceresit is—

1. *Moisture Proof.* Repels water.
2. *Pressure Proof.* Withstands any amount of hydrostatic pressure.
3. *Disintegration Proof.* Makes concrete immune from destructive elements, etc.
4. *Permeates.* Becomes integral part of concrete.
5. *Retains Original Strength of Concrete.*
6. *Odorless.*
7. *No Discoloration.*
8. *Most Economical.* Requires no expert labor.

Contents of Unique Book: Testimony of five "witnesses" is given in 5 books. Prof. Scientist explains the superiority of *Integral Paste*—how Ceresit destroys Capillarity, etc.; Mr. Engineer gives reports of tests by American and European experts; Mr. Builder shows Ceresitized buildings, etc., all over the world; Mr. Owner offers testimonials from builders everywhere; Mr. Demonstrator shows how to prove the case for yourself.

WATER CERESIT PROOFING

For Tunnels, Dams, Basements, Sub-Basements, Reservoirs, Swimming Pools, Walls, Bridges, Concrete Roofs, Cement Stucco for Interior Finishes

Send In Coupon

You do not dare risk using any waterproofing compound so long as there is a shadow of doubt as to its reliability. So, do not lose a moment getting the "Court Record of 5 Witnesses." Simply tear out and mail the coupon to

Ceresit Waterproofing Company

129 Clark Street, South CHICAGO, ILLINOIS

FACTORIES: Chicago; Unna, Westphalia, Germany; London; Paris; Vienna; St. Petersburg; Warsaw.

BRANCHES:

1133 Broadway, NEW YORK, N. Y.
1218 Chestnut St., PHILADELPHIA

Catalogued in Sweets Index

Be Sure
To Get
This Book

It is interesting,
scientifically correct,
complete

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Monroe Building
Chicago, Illinois

Get
This
Book



This entirely new form of catalog—different from the old dry-as-dust style—just issued, is really 5 books in one. One book is built over another, stair-step fashion. Above all the books sits a judge. By means of this innovation Ceresit Waterproofing is placed "on trial."

Ceresit Waterproofing Co.,
129 Clark Street, South, Chicago, Ill.
Please send me a free copy of the new Ceresit Waterproofing Book, the "Court Record of 5 Witnesses."

Name.....
Address.....
Business.....
Construction work interested in.....

A.C.B.

Another Grand Prix won
by Ceresit at Brussels, Belgium,
1913, in addition to 8 highest awards
formerly won at principal world's fairs

"Balance" in a Floor Scraper the Thing Most Needed

It seems that the main thing needed in a floor scraper today is "balance." In order to "keep" to the floor a scraper must necessarily possess weight. But if this weight is not properly distributed, if it must be lifted by the operator after each movement, it makes a very tedious back breaking work. The first to meet this modern day need is said to have been the Fox Supply Company, Brooklyn, Wisconsin. Their scraper is one of the lightest on the market, still it "hangs" to the floor without "chattering." For 95 per cent of the entire weight rests on the blade edge while on the floor.

This means that all the weight is used where it is necessary. And because of a simple system of distributing this weight the blade is raised from the floor with but little or no effort on the part of the operator.

Carpenters and builders everywhere have been loud in their praise for the Fox because it enables the operator to do a full days work without fatigue. Another reason for its wide popularity and success is due to its knives. Frank Campion, one of the best blade experts of the country, superintends the making of the knives which go with the Fox scraper.

The Fox people are the only people to our knowledge who sell their scraper "completely equipped." This means no extras to buy. And still with these many added advantages and features their prices are low.



Birch and Hemlock to be at Forest Products Exposition

"I am a great believer in competitive advertising. I believe that the more Associations advertise the woods which they represent, the more trade will be stimulated. But, I do not believe that any wood should be advertised at the

expense of another. All of the different Associations should join hands to make the advertising campaigns carried on by them clean ones. One of the best methods of advertising that can be adopted by any Association is an exhibit at the Forest Products Exposition and I recommend that action be taken by this Association to formulate a plan to have the woods that it stands for represented." Pres. E. A. HAMAR, of the Northern Hemlock and Hardwood Mfg. Asso. at the Green Bay, Wis. Semi-Annual Meeting, July 23, 1913.



Utility Wall Board and Its Uses

This is the title of a new booklet, beautifully illustrated with half-tone engravings of pleasing interiors finished in Utility Wall Board. This booklet deals with the uses of wall board, tells how to apply it, gives directions for measuring, and a great deal of other data of real service to the carpenter.

Artistic remodeling by means of Utility Wall Board is definitely portrayed in these pages and the conversion of attics and other barren places about the house into pleasant, liveable rooms is an assured possibility. There is no waste in the use of this material and the cost is far below that of plaster, while the results obtained are infinitely better and more lasting. The use of wall board with moulding and panel strips is dwelt upon as well as the miscellaneous uses which take in the making of screens, clothes hampers, shirt waist boxes, music cabinets and fireless cookers. Simplicity of application, low cost and no waste make Utility Wall Board worth consideration.

The Heppes Company, 4503 Fillmore St., Chicago, Illinois, manufacture this worthy material, the popularity of which is attested by a large number of builders. A copy of the new book which is fresh from the press room, will be sent to those writing for it.

These All-Mineral Fireproof Shingles Outlast the Building

A building roofed with J-M Transite Asbestos Shingles will never have to be re-shingled.

They are made of two indestructible materials—Asbestos and Portland Cement—moulded into a homogeneous mass under hydraulic pressure.

They are as durable and fireproof as a stone foundation, for they are literally stone shingles.

J-M TRANSITE ASBESTOS SHINGLES

cannot be injured by the most severe weather conditions—no matter how sudden the changes from one extreme to the other. Neither can gases or chemical fumes affect them.

They are non-conductors of heat and cold—keep a building warmer in winter and cooler in summer.

Furnished $\frac{1}{8}$ " thick with smooth edges, in colors of gray, Indian red, and slate; and $\frac{1}{4}$ " thick with rough edges, in gray and Indian red.

Write our nearest Branch for sample and booklet

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products

ASBESTOS

Asbestos Roofing, Packings, Electrical Supplies, Etc.

Albany
Baltimore
Boston
Buffalo
Chicago

Cincinnati
Cleveland
Dallas
Detroit
Indianapolis

Kansas City
Los Angeles
Louisville
Milwaukee
Minneapolis

New Orleans
New York
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Philadelphia
Pittsburgh

San Francisco
Seattle
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1775

THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED

Toronto

Montreal

Winnipeg

Vancouver



Church in St. Petersburg, Fla., Covered with J-M Transite Asbestos Shingles.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

GREENHOUSE TIME IS NOW!

NOTE—Wise, up-to-date **Contractors** and **Builders** **MAKE A HIT** with their best customers by **Recommending CYPRESS, "The Wood Eternal."** Do you?

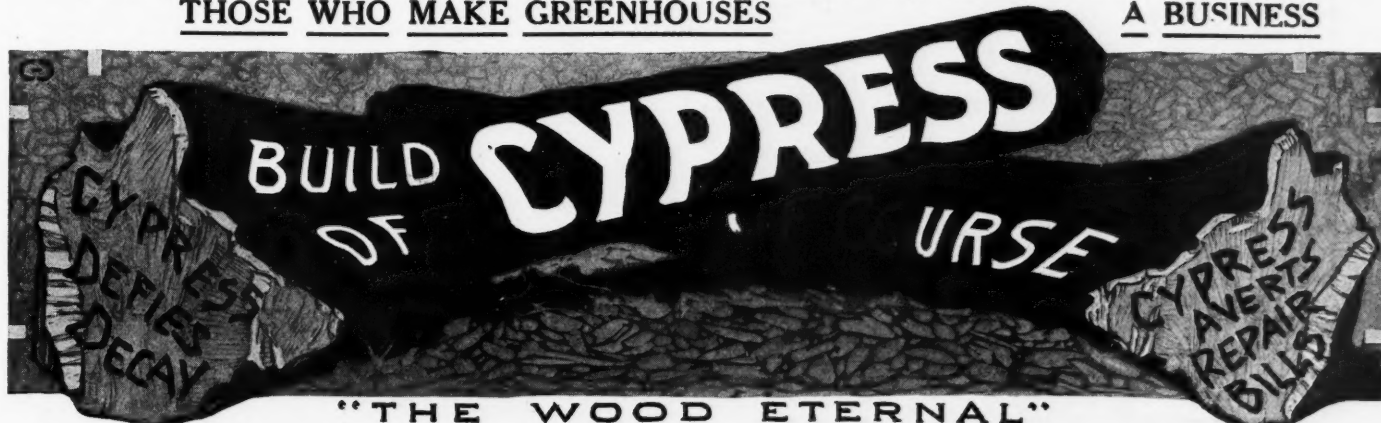
CAN YOU THINK OF ANY HARDER TEST FOR WOOD THAN GREENHOUSE USE?
You know ordinary wood in greenhouses lasts *not over 4 years*

Zero on one side, hot humidity on the other, constant contact with wet, rich earth and compost, constant sprinkling and sweating, all combine in an invitation to hurry up and rot.

Next to the growth of the plants themselves the busiest thing in a greenhouse is the decay-tendency of the wood it is mostly made of.

THOSE WHO MAKE GREENHOUSES

A BUSINESS



"THE WOOD ETERNAL"

One of the largest greenhouse manufacturers, J. C. Moninger Co., Chicago, says:

"We first began using Cypress *exclusively* for greenhouse construction in 1885, using it previously in conjunction with pine. The greenhouses then built with Cypress are being used today by their owners and the wood is found *perfectly preserved and free of any decay or rot.*" Figure it out yourself.



WRITE TODAY for **VOLUME 3** of the **CYPRESS POCKET LIBRARY**, with **20 PAGES** of Valuable Guidance for Greenhouse Contractors. (SENT PROMPTLY and no charge.)

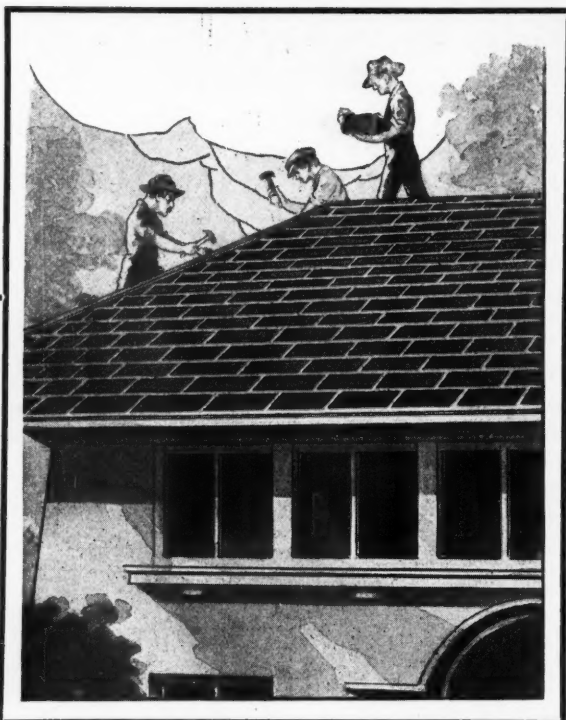
"WOOD THAT WILL STAND THE GREENHOUSE TEST WILL STAND ANYTHING"

"The better a builder builds his buildings—or even alterations—the better he builds his own reputation." The better builders all over the country are glad when their customers insist on CYPRESS, "THE WOOD ETERNAL," or permit them to use it. Cypress is best for the owner because it lasts practically forever WITHOUT DECAY. (And Cypress is easy to work—GOOD FOR YOUR TOOLS.) Take advantage of the **FACTS!**

Let our "BUILDER'S HELPS DEPARTMENT" help YOU. Our entire resources are at your service with Reliable Counsel
SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
1216 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

INSIST ON CYPRESS AT YOUR LOCAL DEALER'S. IF HE HASN'T IT, LET US KNOW IMMEDIATELY

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



These Men Know

Carpenters and builders who have visited our plant realize why Flex-A-Tile Asphalt Shingles are so *lastingly good*.

Flex-A-Tile Asphalt Shingles

We use the highest grade asphalt mined in the Rocky Mountains. It costs us more but it enables us to make *better shingles*. We buy the finest wool felt—made of long, strong wool fibres. This costs us more too, but quality tells in long wear. We compress these wool fibres and the selected asphalt into a well tempered, thoroughly amalgamated sheet. Then we crush into the surface of this sheet under tons of pressure, the finest grade of Vermont slate or granite.

This slate or granite we *sift three times*. And we lose 30%, but sifted, graded, dust-free granite makes a more closely amalgamated, better looking, longer wearing shingle. Yet Flex-A-Tile Asphalt Shingles cost no more than ordinary stained wood shingles.

Flex-A-Tile your next roofing job

Write today for a sample
and the Flex-A-Tile Book

THE HEPPE'S CO.

Also manufacturers of Asphalt Paint, Asphalt Roofing in any finish and Utility Wall Board

1010 45th AVE., CHICAGO, ILL.

Flex-A-Tile Asphalt Shingles come in natural red, garnet, greenish gray, emerald, brown colors

C. Edward Wood Appointed General Sales Manager of The Peck, Stow & Wilcox Co.

The Peck, Stow & Wilcox Company, of Southington, Conn., New York, N. Y., and Cleveland, Ohio, manufacturers of mechanics' hand tools, tinsmiths' and sheet metal workers' tools and machines, builders' and general hardware, have announced the appointment of Mr. C. Edward Wood to be general sales manager.

Mr. Wood brings to his new duties an unusual knowledge of the lines which his company manufactures as well as of the general hardware business, through which the products of The Peck, Stow & Wilcox Company are, in the main, distributed.

He adds to this a very wide personal acquaintance among



C. Edward Wood, New General Sales Mgr.
The Peck, Stow & Wilcox Co.

the trade, both in the United States and in Canada, gained by many years of successful salesmanship, including not only his association with The Peck, Stow & Wilcox Co., but his previous connection with The Simmons Hardware Co.

Mr. Wood will make his headquarters at Southington, where in 1912 the company erected a large modern plant equipped for the production of what is said to be the largest line of mechanics' hand tools offered by any one maker. In the same plant they also manufacture not only the largest, but the oldest line of tinnerns' and sheet metal workers' machines in the country, dating from 1819.

✦
The National Association of Cement Users, founded in 1905, has changed its name, having been incorporated on July 2, as the American Concrete Institute.

The Saw that Smiles at Nails

✦
You have often heard of the time-honored method of testing swords. The blade is bent until it touches the hilt. If, on being released, the blade resumes its original position, the sword is considered to be of excellent workmanship and so, reliable. This flexibility is especially characteristic of the famous "Toledo blades," the steel for which is made by a secret process in Toledo, Spain.

It's not such a far cry from swords to saws. They both

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Free

Helps To Better Business

For Contractor—Builder—Wood Finisher

THIS Dollar Portfolio of Wood Panels and Instruction Book are two fine examples of the Johnson Service—we offer them free and postpaid—send the coupon today.

The Portfolio shows the beautiful effects obtainable with Johnson's Artistic Wood Finishes on oak, pine, cypress, birch, gum, etc. With it you can show your clients just how their work will look when finished the Johnson way.

The book gives full instructions for finishing all wood—soft or hard; covering capacities, prices, etc.

Johnson's Wood Dye

penetrates deeply, coloring the wood permanently—it dries quickly without a lap or streak. Made in seventeen popular shades, all of which can easily be lightened or darkened.

Johnson's Prepared Wax

imparts a velvety, protecting finish which will not chip, mar or scratch.

Fill out the coupon and mail to us TODAY. The Portfolio and Book will be sent promptly—free and postpaid—you are placed under no obligation whatever.

S. C. Johnson & Son **Racine, Wisconsin**
"The Wood Finishing Authorities"

S. C. Johnson & Son, Racine, Wis. **Value \$1.25 FREE**

Please send me **Free** your **\$1.00 Portfolio of Wood Panels with specifications and instructions, also your 25c 1913 Book, BOTH FREE.**

Name _____

Address _____

My Dealer's Name is _____

His Address _____

You will get **SPECIAL ATTENTION** if you tell Advertisers you read **American Carpenter and Builder**.

have done their share in shaping the country's destiny, and nothing needs a good, tough, flexible blade more than a saw does. A steel very similar to Toledo steel has been manufactured here in this country by the Pennsylvania Saw Co. By their secret process, they harden and temper the steel to make tough fibre, this Vanadium Steel, as it is called, is extremely pliable, reducing the liability of the blades kinking or breaking. Besides, these qualities aid in setting and sharpening.

You can wind the saw, it is claimed, like a watch spring; release it and it will take its natural position. Drive the teeth at right angles to the blade and yet they can be straightened without danger of breakage. That's why Vanadium saws smile at nails. A keen cutting edge and good service beyond the ordinary is what the manufacturers promise in their guarantee.

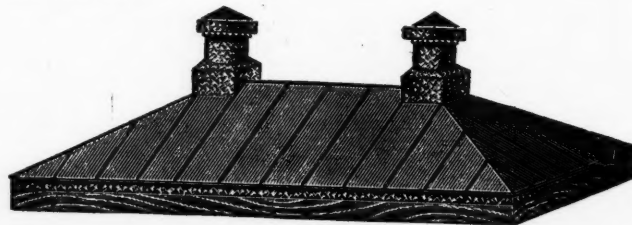
One might conceive that promise of such value would boost the price. Not so. Vanadium saws cost no more than the ordinary kind. Mr. E. S. Frease, 512 W. First St., Los Angeles, Calif., sent the following letter of appreciation to the makers of the Vanadium saw.

"Sometime in the latter part of May I replied to an ad. of yours in regard to Vanadium saws. You sent me one by parcel post which I received O. K. Thanks for same and your confidence in me and your goods. Both have the right ring to me. Have tried the saw out thoroughly and like it ever so much; am greatly pleased with it. My employer who filed the one you sent and put it in shape, says it is the nicest filing saw he ever touched."

It occurs to us that many others like Brother Frease will be glad to give Vanadium saws a trial. Of course if the saw is not satisfactory, you can return it and get your money back. The Pennsylvania Saw Co., 1000 Betz Bldg., Philadelphia, Pa., will be glad to send you further particulars and prices on their various styles of Vanadium saws. We suggest that you write them.

Darkness Turned to Light

The installation of ventilated skylights is something that can be readily undertaken by the carpenter and builder under an improved system developed by the Galesburg Sheet Metal Works. The combination of the "Hayes Pattern" rafter bar with curb bars and ridge bars invented by the manufacturers allows the metal frame work to be joined in such a manner that it can be shipped "knocked down," thereby effecting a considerable saving in transportation charges and reducing the liability of damage to the shipment in transit. Neither special tools nor skill nor soldering is necessary to set up these skylights.



Galesburg Sheet Metal Works Ventilating Skylight

The excellent booklet, "Darkness Turned to Light," displays some fine skylights and other sheet metal products of which the manufacturers can well be proud. The book is a guide to the builder in selecting the type of skylight best suited to his needs and there are full directions so that he cannot go astray. Superiority of material and workmanship have made Galesburg Skylights a reliable standard to which one can turn with the certainty of acquiring the best. "Darkness Turned to Light" will be sent free by the Galesburg Sheet Metal Works, Galesburg, Illinois, on receipt of your request.

A turn of a Screw Driver adjusts blades



Buy a Stern Floor Scraper

This Month and Save \$7.00

Weights Removed

Simple
Accurate
Rapid



Will hold any size blade up to 3 1/2"x7". No specially designed blade required. Every hardware store has a blade that will fit. Satisfaction or your Money Back.

The handle and blade can be adjusted to a thousandth part of an inch. Blades removed and replaced instantly by a turn of the hand. Place an ordinary screw driver in the slot in the center of the quadrant, to adjust the blade holder.

Best and the Price Reasonable

Stern Mfg. Co., Lancaster, Pa.

Will say I am highly pleased with the Floor Scraper. It is simple in construction and easy to handle; takes right hold of the wood. We used it on an oak floor in a residence I remodeled and it did splendid work. Could roll up shavings as wide as your hand and had to do very little work with a hand scraper. We also used it on a large maple floor in a dance hall at Rome City, a pleasure resort 8 miles from here and it did the work splendidly. I can cheerfully recommend it to any one wanting to purchase a floor scraper. I had circulars from other firms HIGHER PRICED, but yours looked the BEST to me and the PRICE REASONABLE.

Wishing you success, I remain, Yours
(Signed) CLARK SHEFFER,
122 South East, Kendallville, Ind.

See that you investigate the Stern Floor Scraper before you buy any other. You will find that the Stern does the work just as well as a higher priced machine.



Does not Tear or Chatter the Floor

The Crown Saw Gauge

PRICE \$2.50



The Crown Saw Gauge is placed directly on the saw thereby doing away with the tri-square for weather-boarding and insures a square cut that will make a perfect joint without the aid of a block plane. Mounted on two boards nailed lengthwise at right angles, as shown in illustration, it will cut crown moulding and also picture frames true. Just the thing to saw bridging. It is indispensable on the scaffold for cornice work, as it can be placed directly on the moulding to cut any desired miter or angle. Readily adjusted to any angle and securely fastened by a double cam locking nut. Provided with screws to adjust tension on saw. Adjustable to saw a compound miter. The most useful and convenient tool on the market for the price. Weight, 2 lbs. Price, \$2.50.

Stern Mfg. Co., Lancaster, Pa.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

The Only Dustless Floor Surfacers

A CHANCE TO EARN \$10.00 A DAY

The PEERLESS FLOOR SURFACER is vastly different from all others and does work that is beyond comparison. It removes paint, varnish, grease and oil; will work close to baseboard or in small closets. A wavy or chattered floor is an impossibility with the Peerless. No matter what condition the floor is in, the Peerless will surface it evenly and smoothly and without dust. The man who has worked in the dust-laden atmosphere caused by the ordinary floor finisher can appreciate this feature.



The Peerless is a Surfacers and a Finisher combined. It does faster and better work than twenty men could do by hand. The earning capacity of the Peerless is conservatively placed at \$10.00 net per day, yet many users have earned much more.

WE WANT
Representatives and
Agents for the
**PEERLESS FLOOR
SURFACER**
in every section of the coun-
try. **LIBERAL COMMIS-
SIONS AND DISCOUNTS**
will be given to the
right parties.
**MAIL
THE COUPON**

WHAT OTHERS SAY

The work done on the floor of Company B Armory with your Peerless Floor Surfacers was very satisfactory. The floor was in bad shape and had I not been induced to try your Surfacers, it would have meant a new floor. I have received nothing but words of praise upon the condition of the floor. I can truly recommend your Surfacers.

JOHN H. LAABS,
Capt. Company B, Second Infantry, W. N. G.,
Oshkosh, Wis.

Your machine did even more than you claimed for it. Our floor is now as smooth as glass, and we now have a dancing floor that is second to none in the country, at A COST OF ONE-QUARTER THE AMOUNT OF ANY FORMER ESTIMATES. We take pleasure in recommending your machine to others.

Trustees Jackson Lodge No. 113, B. P. O. E., Jackson, Mich.

THIS IS YOUR OPPORTUNITY

to get acquainted with the merits of the best floor surfacer made. We can prove to you that our claims for the Peerless are absolutely just.

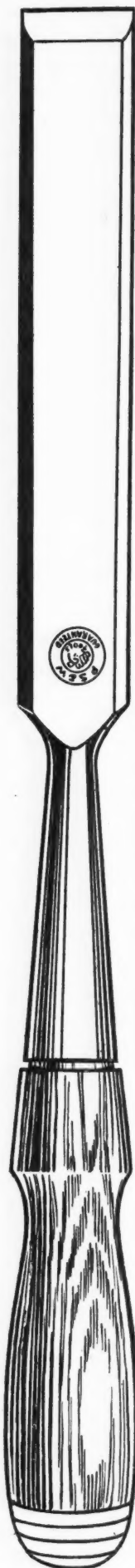
The Peerless Floor Surfacers is furnished with vacuum arrangement and equipped for 110 volt direct current. We can furnish a machine to meet the requirements of your power plant or will supply portable outfits for the builder who lives in towns where there is no electric current.

**MAIL THE COUPON AT ONCE AND WE WILL
SHOW YOU CONVINCING PROOF THAT THE
PEERLESS IS THE BEST FLOOR SURFACER.**

**Peerless
Floor Surfacing Mach. Co.,
Oshkosh, Wis.**

TEAR OFF THIS COUPON AND MAIL IT TODAY
Peerless Floor Surfacing Mach. Co.,
Gentlemen: Oshkosh, Wisconsin.
Without any obligation to me please send me full particulars about
the Peerless Floor Surfacers. Also tell me about your agency
Name
Address
City & State

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



This trade-mark, "The MARK of the MAKER," is a guarantee of the highest known quality in hand-tools. Always look for it.]

What Makes a P. S. & W. Chisel Hold Its Edge?

FIRST—It's the quality of the steel. The blades of these chisels are all forged from solid bars of the best English tool steel.

SECOND—It's the superior hardening and tempering, due to the P. S. & W. knowledge and experience that goes way back to 1819.

THIRD—It's a dozen different points of skill and care possible only to the largest chisel makers of America.

P. S. & W. Guaranteed Tools for Carpenters

Among many other items are Braces, Auger Bits, Chisels, Gouges, Draw Knives, Squares, Pliers, Callipers, Hatchets, Hammers, etc., etc.

Write for a free copy of the "Mechanics' Handy List," a 170 page book, listing over 200 tools and including 35 pages of valuable information for daily use.

The Peck, Stow & Wilcox Co.

MFRS. of the Largest Line of Mechanics' Hand-Tools Offered by Any Maker

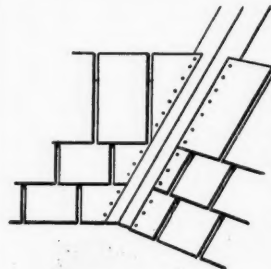
SOUTHINGTON, CONN. CLEVELAND, OHIO

Address 22 Murray St., New York City

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

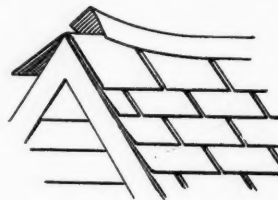
Rex-tile—The Scientific Shingle

Rex-tile is not an old roofing—just sufficiently old to have been tried out thoroughly and pronounced satisfactory. Rex-tile is a shingle of this day and age when a really good wood shingle is hard to get and when municipalities are legislating against the roof that is not fireproof.

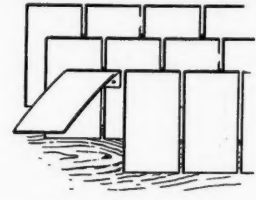


Detail of Valley

These shingles have thick butt ends, thereby retaining the architectural beauty of the wood shingle and square tile. An indestructible surface and the color are parts of the roofing itself, so they are permanent. In laying, they are applied in single pieces and there is no danger of their warping or splitting, or cracking. Their uniformity of size prevents waste in laying and reduces the cost of application. By using Rex valley strip, the expense of metal valleys and ridges is done away with. Beginning at the eaves, the first course is laid double in the usual manner, always nailing through the under-bent over-end. This fastens the butt of the shingle as well as the upper portion. See illustration. The other illustrations show the method of



Ridge Construction and Method of Nailing



making valleys and ridges with Rex valley strip.

To those interested in a modern, fireproof shingle, let us say that the manufacturers, The Flintkote Mfg. Co., 88 Pearl St., Boston, Mass., will gladly send descriptive matter, samples and prices of Rex-tile on request.



A Red Veneered Asbestos Shingle

Since the introduction of the Asbestos "Century" Shingle in this country some seven or eight years ago, the demand for red shingles has been constantly increasing. The red roof has even been in demand to carry out certain architectural effects and color harmonies and the difficulty in obtaining a satisfactory red roofing at a minimum cost is one that frequently confronts the prospective home builder and architect.

In addition to the red Asbestos "Century" Shingles that are on the market and which themselves figure somewhat cheaper than red slate, there is now obtainable what is commercially known as a Red Veneered shingle. This is a shingle the body of which is grey cement color, surfaced with a layer of rich Indian red color. The makers of this shingle claim that by the process of manufacture under which their shingles are produced it is possible to manufacture a shingle of one color mixture and after the process has reached a certain point to complete the shingle with a mixture of an entirely different color without changing or affecting the structural condition of the sheet as a whole.

The effect produced in using a red veneered shingle is identically the same as in using the solid red and the cost is considerably less. These red veneered shingles have been very widely used and the claims of the manufacturer have been substantiated by actual experience. The shingle is not simply a sheet of red material and a sheet of grey material pressed together, but in every respect it is identical with the ordinary Asbestos "Century" Shingle made in solid color. This innovation in the roofing market should be one

He
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given away.
You need this
mail today.

The
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wreckers
There is no
careful atte

Harris B

Send n
Catalog
50,000
Roofing
and Cel

My Name is

My Address

County.....

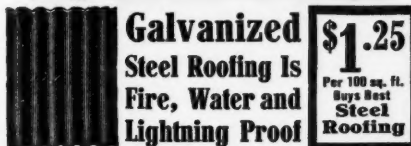
R. R.

Tremendous Saving If You Can Use Any of These Odd Lots

107

ROOFING

AT HALF PRICE



Galvanized Steel Roofing Is Fire, Water and Lightning Proof

\$1.25
Per 100 sq. ft.
Buys Best Steel Roofing

Here's an odd lot of **Corrugated Iron Roofing** which we were fortunate enough to buy at a price which enables us to sell it for only \$1.25 per square—just about half what it is really worth. Is brand new, perfect, first class in every respect, but light weight. Not galvanized but black steel roofing. Sheets are 22x24 ins. by 14 in. corrugation. Specify Lot No. BB-700. Price is f. o. b. cars Chicago. Write for our **Special Freight Prepaid Prices** on new galvanized roofing. Our prices lowest ever offered in the roofing business. Galv. roofing \$2.50 per square and up. Anything you want in metal Roofing, Siding or Ceiling.

62c Per 108 Sq. Ft. Buys Best Rubber Surfaced "Ajax" Roofing

This is our one-ply "Ajax" brand, guaranteed to wear as long and give as good service as any rubber surfaced roofing on the market. Put up in rolls of 108 sq. ft., containing 3 to 4 pieces to the roll. Price of 62c per square is f. o. b. Chicago and includes necessary cement and caps to lay. At 75c per square **We Prepay Freight** to any point east of Kansas and Nebraska and north of Ohio river provided order is for at least 3 rolls. Write for prepaid prices to other points. Other grades of ready roofing fully 30% below regular quotations. Send for free samples and roofing catalog.

Previous Price Records B-U-S-T-E-D WIDE OPEN!

We're always smashing prices—and it sometimes happens that a lucky purchase enables us to smash them a little harder than usual. This is one of those out-of-the-ordinary occasions. There isn't another firm on earth that occupies the unique position in the commercial world that we do. Our enormous buying power represented by our ten million dollars capital makes it possible for us to buy for spot cash, entire stocks at manufacturers' and jobbers' forced sales, receivers' and sheriff's sales, etc., that are beyond the reach of ordinary buyers. Often our purchases enable us to sell the goods for actually less than manufacturing cost—and usually for about half what dealers ask for the same goods. Mind you, this merchandise is brand new, and exactly as represented. The prices here quoted tell their own story of **your saving**. These are odd lots we're offering and to move them quickly **we've cut the price to the limit**. It would be nothing short of business suicide for any other firm to offer this quality of merchandise at such ridiculously low prices, but, owing to our method of buying, we can easily afford to do so. Can you really afford to pass up a chance like this? Remember, your saving is from one-fourth to one-half.

No Money Down

You can buy a carload of material from us without paying a cent in advance. All we want to know is that the money will be paid us as soon as the material is received, unloaded and checked up. We certainly would not dare to do this if we furnished anything but strictly first-class material. Our building material is right, and our terms more liberal than that offered by any other concern.

GUARANTEE

This Company Has a Capital Stock of Ten Million Dollars. Its honesty and upright methods have been known for 20 years; we have thousands upon thousands of customers who have yearly taken advantage of our special sales. We say to you, that no matter what you buy from us, if you fail to find the material absolutely satisfactory, and according to your requirements and expectations, then we will take back such unsatisfactory material, refund your money and pay the freight charges both ways.

WIRE

AT CUT PRICE

BARB WIRE
Less 2c Per Rod

New galvanized, heavy weight barb wire, put up on reels, about 100 lbs. to the reel. Lot 2-BB-26, per 100 lbs. **\$2.05**. Galvanized barb wire, light weight, first grade, best made, put up exactly 80 rods to reel, 2-point barbs. Lot 2-BB-25, per reel, **\$1.40**.

WIRE NAILS \$1.38

Per Keg, 1

10,000 kegs, put up 100 lbs.

to the keg mixed, all kinds together.

Lot 2-BB-33, price per keg **\$1.38**.

1,000 kegs of ten pennyweight regular wire nails, 100 lbs. to the keg, while they last, per keg, **\$1.25**. Write for free Wire and Fence Catalog. Send coupon.

Smooth Galvanized Wire, \$1.25

Per 100 lbs., 1

Suitable for fences, stay wires, grape vines or for any ordinary purpose where wire is used. Is irregular in length—ranges anywhere from 50 to 250 feet. **\$1.25** per 100 lbs. for No. 6 gauge. Other sizes in proportion.

Best Hog Fencing, Per Rod, 15c

Another remarkable bargain. High grade, perfect fence made of No. 9, 11 and 12 wires, 28 ins. high, square mesh, put up in suitable size rolls. Lot 3-BB-31 per rd. **15c**. Other heights in proportion. Staples 100 lbs. \$1.75



BUILDING MATERIAL



\$739.00

Buys the Material to Build this Home

This beautiful modern, full 2-story, 7-rooms and bath home has been sold nearly 1,000 times; copied and imitated all over the United States. It is not only a beauty but is thoroughly practical for any climate. Substantial construction throughout.

No. 1 joists, rafters and studding; clear siding, clear flooring, clear shingles. Beautifully grained clear yellow pine interior trim. All material necessary to build with exception of plumbing and heating and masonry material for only \$739.

This price positively cannot be equaled anywhere else—is easily 25 to 50 per cent below any local dealer's prices. By long odds it's the biggest house bargain we've ever offered and is a special for the fall of 1913 only. We have hundreds of unsolicited letters from customers who have bought this house some of whom saved as much as \$1,000 on the complete home. At this special price you should do as well, or even better.

We guarantee prompt shipment right from our Chicago stocks, where if you wish, you can come and see it loaded. No money down. Even if you do not plan to build now it will pay you big to order the material now and build later. It's too big a cash saving for you to overlook.

\$2.00 Buys Complete

Perfect Blue Print Plans and Architectural Specifications, including full descriptive Material List, giving the size, style, quality and catalog number of the various items entering into the construction of this house.

\$10,000 Book of Plans Free

Contains over 100 pages of modern homes, bungalows, barns, portable houses, garages—the most perfect book of plans ever given away. Handsome illustrations, clear floor plans, correct low prices. You need this beautiful book; be sure to check it off in coupon below and mail today. It's absolutely free.

Architectural Service

Personal Service. That's what we mean. Personal service in every sense of the word, either by mail, or if you come to Chicago. We have an Architectural Department that is developed so far beyond the attempts of others, that there is simply no comparison. In this department we offer you service of a character that is bound to appeal to you.

If you have not formed a particular idea as to just what kind of a building you want, tell us in your own way, what your general ideas are, and if possible send us a rough pencil sketch.

This Will Cost You But Two Cents and we will reply promptly, giving you the information that will be worth one thousand times the 2c. You can sit right down in your own home, and see your plans developed step by step from crude ideas into a practical, architecturally correct, and perfect design. Our charge for such service is no reasonable, that in the end it is absolutely free, for the reason that we refund such charge when your material is ordered from us. We will make you a proposition that will mean the cutting out of all preliminary expense and which will show you how to proceed, point for point, with the work in hand.

COME TO CHICAGO

If you have time. Bring your sketches and ideas with you. Our architects, expert estimators, plumbing and heating engineers will quote you while you wait, and give you much valuable information on the subject of architecture and building. Remember our business extends from coast to coast. We have taken the best ideas from all the land, have assimilated them into high quality, modern, up-to-date homes.

Save 1/2 On Heating Plants

Most up-to-date hot-water, steam and hot air heating plants manufactured. Send sketch of your floor plans, size of rooms, etc., and we will make estimate on plant best suited to your building that will save you fully half. No experience needed to install—we furnish blue print drawings, specifications and full instructions so that you can install plant without aid of steam fitter. Plants guaranteed.

Axminster Rugs, 75c

We bought at New York Auction an enormous stock of high grade, brand new rugs and floor coverings. 75c buys Axminster Rugs of extra grade. This is a sample of our money saving bargains. Write for our complete free Rug Catalog, showing actual colors and designs.

Iron Pipe and Fittings

RENOVATED

Good iron pipe in random lengths, complete with couplings, suitable for gas, oil, water and conveyance of all liquids; size 3/4 to 12 in. Our price on 1 in. per foot 3c; 1 1/4 in. at 4c per foot. Complete stock of valves and fittings. Send your specifications.

Bathtub Complete \$13

This is the white enameled cast iron, one piece, heavy roll rim bathtub; fitted with the latest style nickel plated trimmings, including Fuller double bath cocks for hot and cold water; nickel plated connected waste and overflow, and nickel plated supply pipes. It is 6 ft. long and is good enough to answer the needs of any man. Lot 5-BB-101.

DON'T BE AFRAID

Sometimes people seem to be afraid to send their orders because they think it is impossible for us to sell strictly first class merchandise at the ridiculously low prices which we quote. We want to tell you emphatically that such fears are absolutely groundless. We freely admit that our low prices often do appear to be altogether out of reason; but just consider, please, in what vast quantities and in what manner we buy our stocks and it must be perfectly plain to you that our low price quotations are justified and that the **REAL QUALITY** behind every article we sell. Our guarantee is so broad and binding that you take no chances when you deal with us. Your money back, including freight charges, if not satisfied.

The Chicago House Wrecking Co.

prominently known for 20 years as the great "Price Wreckers" is now being operated under the name of Harris Bros. Co. There is no change in our policy, or in our business methods—we promise the same careful attention to your wants, and the same remarkably low prices as heretofore.

MAIL THIS COUPON TODAY

Harris Bros. Co. 35th and Iron Sts., Dept. BK 149 Chicago

Send me—free—the following catalogs marked with an X.

- | | | | |
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| <input type="checkbox"/> Catalog of 50,000 Bargains | <input type="checkbox"/> Building Material | <input type="checkbox"/> Rugs and Carpets | <input type="checkbox"/> Plan Book of Houses and Barns |
| <input type="checkbox"/> Roofing, Siding and Ceilings | <input type="checkbox"/> Wire and Fencing | <input type="checkbox"/> Plumbing and Heating | <input type="checkbox"/> Paints, Oils and Varnishes |

My Name is.....

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Furniture and Rug Catalog

A descriptive book of bargains from our Furniture, Rug and Household Goods Dept. Every item offered means a saving of 30 to 50%.



Roofing Catalog

A book covering this subject complete. Tells you how to select the best kind of roofing for general purposes, also describes our Siding and Ceiling. It's free. Write for it today.



Wire and Fencing Catalog

A complete description contained in this book of all our wonderful bargains in Woven Wire Fencing, Barb Wire, Nails, Bolts, etc.



Book of House and Barn Plans

Contains 100 designs of different kinds of buildings and houses, from \$147.50 up. Also shows the latest style barns. It's free.



Building Material Catalog

A 200 page book of bargains in Millwork, Lumber, Paints, Plumbing, Heating Apparatus, Hardware, etc. Just what you need.

HARRIS BROS. CO. 35th & Iron Sts. CHICAGO

of particular interest to those desiring an attractive red roofing at a minimum cost.

These red veneered shingles, of course, possess all of the fire resisting and permanent qualities of the regular asbestos shingles.

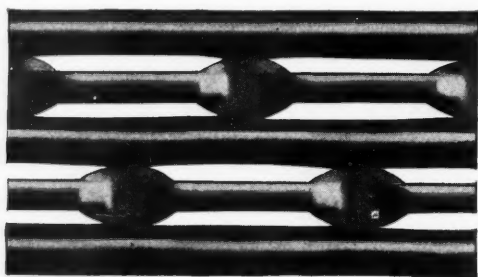
Keasbey & Mattison Company, Ambler, Pa., are the makers and will furnish full information on request.



An Aid in Stucco and Plaster Work

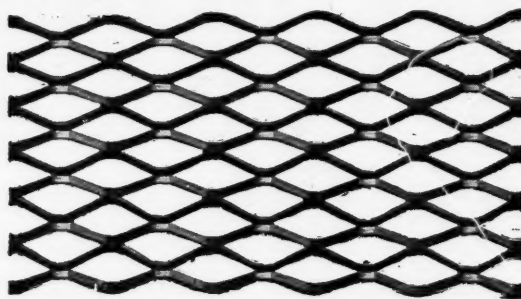
Something different in the way of metal lath has been made by the Sykes Metal Lath & Roofing Co., and for the information of those builders who do considerable plastering and stuccoing, we give a brief description of these favorite laths.

The expanded cup lath shown here has a set and width to the strands that makes it more rigid and helps greatly in forming a perfect key. The plaster or stucco will completely



Sykes Trough Lath

embed the strands thereby aiding the natural rust-resisting properties of the lath. As stucco houses are becoming more popular, the construction of them is being better understood and now they may be erected in any climate. A difficulty



Sykes Cup Lath

of the past was the use of wooden lath, but with Sykes expanded cup lath the expansion and contraction of the metal and the stucco are the same. Result—no cracks. Such lath is also very fine for overcoating old houses. The expanded cup lath shown here is self-furring and when used with cement or stucco, you may safely say that you really have a reinforced concrete wall. The sheets of lath are uniform in length and width and are made with anti-rust coating, painted black or galvanized.

The trough lath also illustrated, has been most successfully used for both interior and exterior work. The novelty of the design and the corrugation make this a sheet lath of exceptional strength. It is ideal for mantel and tile setting and its strength allows it to be applied on a 16 inch centering with absolutely no uncertainty. The exterior concrete or stucco work placed on this trough lath neither cracks nor checks and makes a fire-retarding wall.

The Sykes Metal Lath & Roofing Co., Niles, Ohio, also make several styles of corner bead in which our builders will be interested. As these people are most obliging in sending samples of their products with complete descriptive literature, we suggest that you learn more about these very excellent metal laths.

WHICH MATERIAL

Do You Use for Roofing?



Steel without Copper—total loss



One of the so-called "pure irons"



Copper Bearing Steel

Service tests with uncoated sheets prove conclusively that **COPPER BEARING OPEN HEARTH STEEL** gives more lasting and satisfactory service. Insist on having

COPPER BEARING ROOFING TIN

Stamped "C. B. OPEN HEARTH" with brand.

Send for new illustrated booklet, "Copper—Its Effect Upon Steel for Roofing Tin," and for full information on our Copper Bearing Terne Plates, Apollo Best Bloom Galvanized Sheets, Black Sheets, Formed Roofing and Siding Products.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
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You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



When the man about to build

consults you regarding the kind of roofing to be used, you take no chances if you recommend and sell him

(Quality
Certified)

Certain-teed Roofing

(Durability
Guaranteed)

Rolls and Shingles

Guaranteed 15 years—lasts longer *Certain-teed* Roofing has won out on its own merit—it has made good on the roof, not only in Canada, but in all countries and in every climate throughout the entire world.

Certain-teed Roofing for all kinds of buildings

There is a simple method of applying *Certain-teed* Roofing on any kind of a building. For residences, garages, barns, factories, use *Certain-teed* Roll Roofing—*Certain-teed* Shingles for bungalows, residences, summer cottages, etc.—*Certain-teed* Specification Roofing for skyscrapers, apartment buildings and all large surfaces.



Accept no substitutes

Don't confuse *Certain-teed* with ordinary "make-shift" roofings—we guarantee it for 15 years and inside each roll furnish modern ideas for laying it artistically and permanently.

See that the *Certain-teed* Quality Label is pasted on the back of every Roll and Crate of Shingles—it is placed there to protect you and your customers.

Certain-teed Roofing is used everywhere—recommended by leading dealers and contractors—sold at a reasonable price.

General Roofing Manufacturing Company

E. St. Louis, Ill.
Winnipeg, Can.

York, Pa.
Kansas City

Marcellus, Ill.
San Francisco

Memphis
London, England

Minneapolis
Hamburg, Germany

Chicago

New York

MONTROSS METAL SHINGLES



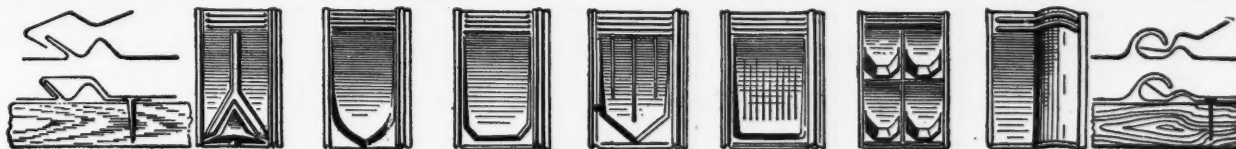
Good Material Plus Scientific Construction

The construction of Montross Metal Roofing absolutely (1) excludes moisture, (2) overcomes the expansion and contraction of heat and cold. It is made in several grades from selected prime material to the finest possible, hand-dipped, open-hearth base plate, oil-painted. We absolutely guarantee them for from 10 to 30 years according to grade. In a wide range of plain or ornate designs.

Our booklet is not a mere catalog, but a hand-book of scientific experience gleaned in 40 years.

Write for your copy today. Agents Wanted.

Montross Metal Roofing Co., 2nd and Erie Sts., Camden, N. J.



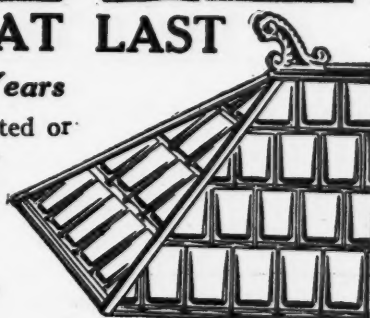
WALTER'S SHINGLES THAT LAST

The Leaders for Twenty-nine Years

Made from I. C. full weight roofing tin, painted or galvanized after stamping. Rust-, storm- and fire-proof. The most complete line of metal shingles and tiles manufactured.

Agents wanted in every community

National Sheet Metal Roofing Co.
JERSEY CITY, N. J.



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Instead Of Wood Shingles Or Slate



INSTEAD of roof-fires or leaks—Cortright Metal Shingles! Safety is a big element in the value of any building and safety begins with the roof. Safety from fire, lightning and weather is secured with

CORTRIGHT Metal Shingles

"The Permanent Roofing"

By handling these shingles, contractors and builders all over the country are getting a lot of profitable roofing business they might otherwise miss.

Once these shingles go on, they *stay on* until the building comes down.

You can prove this if you investigate.

Get our free book "Concerning That Roof" and any special information you may want by addressing a postcard to

Cortright Metal Roofing Co.

PHILADELPHIA - CHICAGO

- - - - CLIP, SIGN AND RETURN - - - -

Gentlemen—Please send me valuable book.

Name

Address

A. C. B., 9-13.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Truck Beats Out R. R. in Hauling Lumber

No more striking instance of a motor truck operating in direct competition with a railroad could be found than that of E. J. Foster, who is operating two five-ton KisselKar trucks in hauling lumber from the yards of the Ganahl Lumber Company in Redondo, Cal., to Los Angeles.

For motor trucks to compete with the railroad on this haul seems, at first glance impossible. Eighty cents per ton is the railroad's charge for hauling lumber from Redondo to Los Angeles. Foster hauls six tons of lumber at a load and makes two trips a day, which if he were working on the same basis as the railroad, would bring him \$9.00 a day.

Where the motor truck wins over the railroad, however, lies in the fact that it can deliver its load directly to the ultimate consumer, thereby eliminating at least two handlings of the lumber and the expense incident of hauling from the freight car to yards in the city and from the city yards to the job for which it is finally intended. In being able to make quick deliveries on stock which may happen to be running low in the city yards, the truck possesses a value which is hard to estimate in dollars and cents but which may often mean the difference between being able to supply a customer with lumber or losing an order. By the use of the truck the entire resources of the harbor yards are available on two hours' notice, as against perhaps two days if the lumber must be shipped by railroad.

Many repair shop men will bear witness to the statement that a society for the prevention of cruelty to motor trucks would be busy with prosecutions most of the time, but Foster is one of the comparatively few truck owners who use the same consideration towards a truck that a good teamster will exercise towards a fine pair of horses. As a consequence, he is making good at an exacting job, and one where errors of judgment in operating and lack of proper equipment would spell failure. He has named his trucks "Rebecca" and "Isaac" and accords them as good treatment as though they were creatures of flesh and blood and not machinery.



Hollow Wall Buildings

The construction of damp-proof, frost-proof and fire-proof buildings by the hollow wall process is a subject interestingly discussed in a book just published by the Van Guilder Hollow Wall Co. Everything in relation to such construction is fully explained and were we to attempt the telling of all the things dealt with, it would mean a complete quotation of the Table of Contents.

On every page is something new, something of interest to builders everywhere; and anyone who takes the trouble to send for this book will be amply repaid; for it is really a text book on concrete construction. It can be considered a book of instruction to those who use cement or concrete; and the following of the data given cannot help being beneficial.

Some space is devoted to the exploitation of the Van Guilder System of Hollow Wall Construction, but in view of the fact that this system is demanding universal recognition, all our builders should acquaint themselves with it. Address your request for this book to the Van Guilder Hollow Wall Co., 720 Chamber of Commerce, Rochester, N. Y.

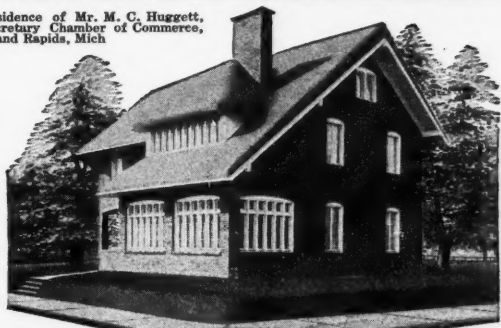


The Carpenters' Tool Case

Why should any carpenter tote a heavy tool box around? It's a nuisance because it can't be carried conveniently; usually it has to be hauled, and that costs something each time. Or if you travel from place to place by train, there are freight or express charges.

The Indestructo carpenters' tool case, made by Wedell &

Residence of Mr. M. C. Huggett,
Secretary Chamber of Commerce,
Grand Rapids, Mich.



Unusual, Beautiful Architectural Effects

WITH usual roofing materials it is impossible to produce such a unique, attractive roof as that illustrated above. But with Reynolds Flexible Asphalt Shingles roll edges, thatch effects and rounded corners are easily made. Such a roof adds real distinction to a well-designed, well-built home, whether modest or most pretentious. Reynolds Asphalt Shingles are not flimsy or soon destroyed. On the contrary, they last longer than wood shingles. They cannot warp, split, crack, curl, drop or blow off. Sun, snow, rain, hail fall to impair their usefulness or beauty. Reynolds Asphalt Shingles are a real protection against fire. Flying sparks cannot set them ablaze. They save part of your insurance cost.

REYNOLDS Asphalt Shingles

Guaranteed for ten years—will last many years longer—

are made of crushed slate or granite securely imbedded in pure asphalt. Natural colors of garnet, red or gray-green which never fade and never need painting. We are the original makers of flexible asphalt slate shingles and tested them for ten years before putting them on the market. They are uniform in size—8 inches by 12½ inches—and are laid 4 inches to the weather.

Let us send you a booklet showing photographs of modern houses roofed with Reynolds Asphalt Shingles—signed opinions of the owners are included. Also opinions of leading architects and builders. Write for a copy TO-DAY.

H. M. REYNOLDS ASPHALT SHINGLE CO.
151 Grant Street, West, Grand Rapids, Mich.
Established 1868

Member of National Builders' Supply Association



THE SHINGLE PROBLEM SOLVED BY

FLINTKOTE
Rex-tile
TRADE-MARK
SHINGLES

The Scientific, Handsome, Durable, Uniform, Water-proof and Fire-resisting Shingle of permanent color.

Rex-tile's beautiful colors (red or slate) are not merely a mineral surface coating, but are a part of the roofing, and cannot wash or wear off.

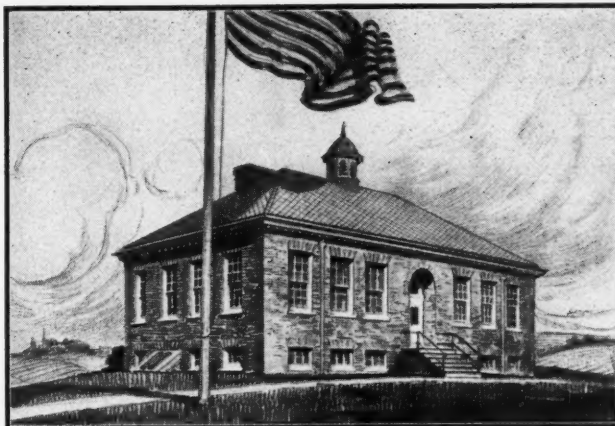
And Rex-tile will not warp, curl up, or blow up. The method of application absolutely prevents it.

If you want a water-proof and fire-resisting roof with all the distinctiveness of a permanent mellow Red or natural Slate color—use Rex-tile—the Scientific Shingle.

Write for a circular and full information.

FLINTKOTE MFG. COMPANY
NEW YORK CHICAGO

BOSTON, MASS.
NEW ORLEANS



School at Oreland, Pa., roofed with Asbestos "Century" Shingles by C. E. Schermerhorn and Watson K. Phillips, Associate Architects, of Philadelphia—Reproduced from an Artist's Drawing.

Asbestos "Century" Shingles

"The Roof that Outlives the Building"

THE French method of laying Asbestos "Century" Shingles originated on the continent of Europe.

It is adaptable to a very large variety of buildings. Besides its artistic effect, it is exceptionally light and strong, with a considerable saving in material and cost of labor.

Roofers who can supply Asbestos "Century" Shingles know how to lay a good roof. Talk to them about it. Write us for their names—and Booklet, "Roofing: a Practical Talk."

Keasbey & Mattison Co.

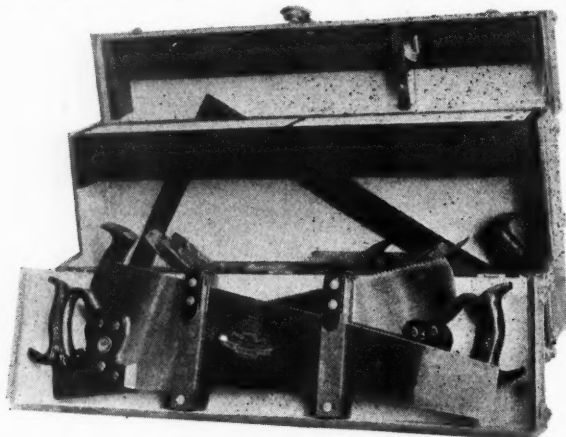
Factors

Dept. B, Ambler, Penna.

This advertisement appears in the September Magazines read by owners and tenants of the better class of buildings. Write to above address for terms and trade prices.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Boers, 157 Jefferson Ave., Detroit, Michigan, provides a mighty handy means of carrying tools. Made of three-ply veneer, covered with strong canvas and painted, it looks just like a suit case and has a place for every tool from gimlet to saw. It has separate compartments for saws, levels, planes, hand-



Handy Carrying Case for Tools

ax, etc., and there is a removable tray for chisels, bits and other small tools. And strong?—Well, it had to be strong to be a good tool case; so the makers have taken care of that by reinforcing the corners and by binding the edges with steel. Two brass clasps and a lock keep the case closed and the tools safe. These cases are made in two sizes, 31 inches and 33 inches long, to accommodate a 26-inch or a 28-inch saw. Of course, if larger sizes are needed, they can be made to order at a proportionate price.

Wedell & Boers are anxious to have all carpenters know about this Indestructo Tool Case and will send complete description and price list when requested to do so.

Drafting and Designing for Carpenters and Builders

For many years there has been an urgent need among carpenters, builders and contractors, for special training in drafting and designing. The younger men, those just entering the field of work, have realized the importance of such a training and have become equipped with a knowledge of drafting and designing before entering into actual work.

Until recently, however, carpenters and builders who were actually engaged in their work could acquire a knowledge or drafting and designing only by giving up their work and devoting several months to training in some technical school. This method proved impractical because of the expenditure of time and money necessary to attending a resident school.

Some time ago the Chief Engineer of the Chicago Engineering Works perfected and put into operation a home study course in drafting and designing for the benefit of those who could devote only their spare time to study. His method has proven successful in every particular and carpenters and builders have found his instructions a practical means of increasing their earnings and profits. His graduates, who took the course for the purpose of becoming expert draftsmen and designers, are said to have proven most successful in this lucrative profession.

The Chief Engineer trains each student personally, by mail. Written instructions, drawing outfit, drawing instruments, blue-prints, etc., are sent to the student and the same work is done at home as in the drafting room. The course has proven of special value to men engaged in carpentry and building construction.

At this time the Chief Engineer is making a special offer to carpenters and builders, greatly reducing his charge for complete instructions. Full particulars of this offer can be obtained by writing to Chief Engineer, Room 536, Engineering Bldg., Chicago, Ill.

BRIDGEPORT STANDARD PRODUCTS ARE USED ON THE WORLD'S MOST IMPORTANT WORK



New Railway Exchange, St. Louis. Has the largest floor acreage of any building in the world. Finished with Bridgeport Standard Products.

The men who invest millions in structures like these; those who specify, select and use material for such work cannot afford the uncertainties of ordinary wood finishes.

BRIDGEPORT STANDARD WOOD FINISHES

have beautified the interiors of thousands of buildings like these. They are in keeping with the most approved and modern ideas of wood finishing—for forty years the standard of the big furniture manufacturers.

ARCHITECTS, BUILDERS, PAINTERS AND OWNERS

in fact, everyone connected with interior wood finishing needs the practical and helpful information contained in our beautiful portfolio, "Modern Wood Finishing." It is not a catalogue or a book of theoretical ideas, but contains accurate illustrations and complete specifications for 48 standard and popular finishes.

Make your request to-day for this work before the present edition is exhausted. This big book is FREE.

THE BRIDGEPORT WOOD FINISHING CO.

Western Sales Dept., 78 West Lake St., Chicago

NEW MILFORD, CONN.

NEW YORK

CHICAGO

BOSTON

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



A Carpenter's Reasons for Using

NEPONSET WALL BOARD

- 1** Because it leaves behind me a good impression of my work—being all finished and not requiring further decoration after I complete my work, as it is furnished in plain oak, burnt leather and cream white.
- 2** Because it will not later go back on me—as it is waterproofed to prevent warping.
- 3** Because I have found it to be a strong, tough material which opens up a new field for me.

Any carpenter will find it worth while to look into the NEPONSET Wall Board Proposition.

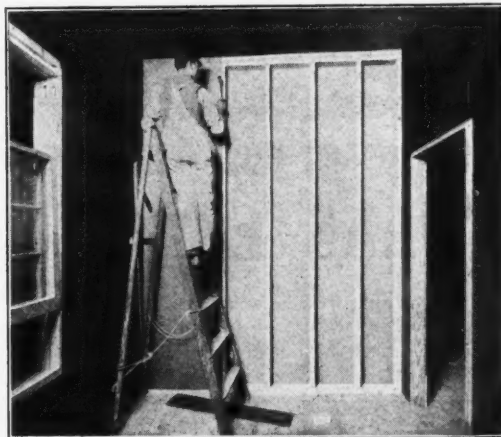
Samples and proposition sent free on request.

BIRD & SON

(F. W. Bird & Son)

28 RIVER ST., EAST WALPOLE, MASS.

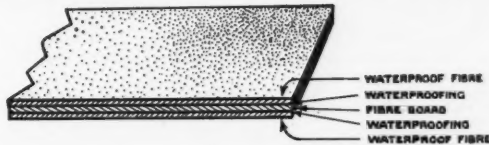
New York Chicago Washington
Portland, Ore. San Francisco
Canadian Plant, Hamilton, Ont.



"Utility is Best"

Hundreds of carpenters and builders the country over are saying this to building owners. For they know the **quality** and **goodness** of Utility Wall Board. And they know, too, that their own profit lies in the satisfaction of the owners.

UTILITY WALL BOARD



We use a special composition fibre board. In this way we get all the advantages of wood pulp and eliminate the disadvantages of contraction and expansion. We buy fine high melt asphalt and make a waterproof asphalt cement. Between layers of this tough fibre board we interpose waterproof cement. Then we surface both sides of the board with a special moisture proofing to insure against house damp. It costs more to make it our way, but you get a **better wall board** when you get Utility. Utility Wall Board never chips, checks or cracks and makes a smoother and more satisfactory wall for decorating than lath and plaster.

Utility Wall Board your next remodeling job

Write today for a Sample
and our Book of Interiors.

THE HEPPE'S COMPANY

Also manufacturers of Flex-A-Tile Asphalt Shingles,
Asphalt Paint and Asphalt Roofing in any Finish.

4503 FILLMORE STREET, CHICAGO, ILL.

A Material the Carpenter Likes to Work With

THAT'S the first thing to realize about Beaver Board. It comes in large panels of pure wood fibre. The joints are covered with broad, decorative wood strips. The material is put up with a hammer and nails and cut with a fine saw or knife. It takes paint beautifully.

In short it is a material you should understand as thoroughly as you do lumber.

Get all the facts by writing today for "The ABC of Beaver Board Construction," and painted sample, sent free.

The Beaver Companies

United States: 186 Beaver Road, Buffalo, N. Y.
Canada: 386 Wall St., Beavertown, Ottawa.
Great Britain: 4 Southampton Row, London, W. C.



BEAVER BOARD

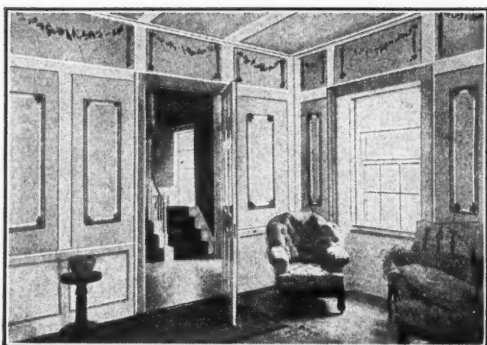


This room in the home of Mr. L. H. Hatton, Saskatoon, Canada, is a typical example of well-designed Beaver Board walls and ceiling.

You will get **SPECIAL ATTENTION** if you tell Advertisers you read American Carpenter and Builder.

We want every Carpenter and Builder to have a sample of **PLASTERGON**

We know once you've examined Plastergon—once you've seen how carefully it's made—how our special chemical process affects the fibre—you'll get enthusiastic, that's certain!



You can't afford to link your reputation with an inferior board—you should know your materials—absolutely!

You can depend upon Plastergon—it stands up wherever used. And there's the secret of the unbounded enthusiasm and faith displayed by Contractors and Builders the country over.

Get Exclusive Sale

Control the Plastergon sales in your city—build up a big profitable business. Our Fall National advertising has just started. We refer the inquiries in your locality to you.

Remember
the
Name

PLASTERGON
TREATED
WOOD FIBRE
WALL-BOARD

Write immediately—before some one else gets
the sale for your city.

PLASTERGON WALL BOARD CO.

Dept. A.

TONAWANDA, N. Y.

A New Tool—The Hinge Gauge

In the August edition of their clever little magazine "Door-Ways," the Richards-Wilcox Mfg. Co., Aurora, Illinois, announce a new specialty—the R-W Carpenters' Hinge Gauge.

Designed to facilitate the hanging of doors accurately and with less trouble than heretofore, the hinges gauge will find quick favor. The tool consists of an upright standard on which are arranged four sliding gauge points and an end plate. When the door is fitted, the hinge gauge is arranged on it with the end adjusted to where the mortises are wanted, so the hinges fit tightly between them. After the spacing for the hinges has been arranged for on the door, it is easy to place the gauge against the side jamb and mark the same spacing. The end plate is sufficiently thick to provide for top clearance of the door.

Among other uses for this tool are noted that it can be used for locating lock mortises; for hanging blinds, casement windows, screen doors, etc.; as a tram rod for laying out all kinds of circle work and to transfer several marks from one piece to another.

The price of the Hinge Gauge is reasonable and the Richards-Wilcox Co., Aurora, Ill., are perfectly willing to send a complete description on request.



Annual Myers Convention

F. E. Myers & Bros., Ashland, Ohio, each year hold a three day convention wherein are brought together all the salesmen, superintendents, foremen and heads of their various departments. The work of the convention recently held was most gratifying in point of bringing out the latest improvements, new goods, increased facilities and new sales promotion plans.

Interesting talks by members of the firm reviewed the policies of the company and the salesmen's part in carrying out those policies. New inventions along their line of manufacture, hints for successful salesmanship and a more intimate acquaintance with the goods manufactured were points covered by the speakers.

F. E. Myers & Bros. are Ashland's largest manufacturers and their increased business has made it necessary for them to let the contract for the addition of a four story and basement structure 106 feet in length by 60 feet wide. Schell & Baker of Mansfield, Ohio, will do the work.

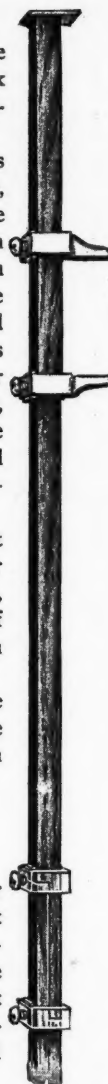
The extensive line of pumps, pulleys, slings, hayrack clamps, and barn door hangers made by the Myers people are well known all over the country and the necessity of a larger plant is an indication of the steady growth resulting from the sale of meritorious products.



Ventilation

Talked of, discussed and legislated on until one would think the subject of ventilation was pretty thoroughly understood: yet people go on using old systems of ventilation under the impression that they have taken care of the problem. It is conceded generally that the more a menace is studied the better means for combating that menace will be evolved. Foul air has been recognized as one of the gravest dangers to all forms of life, and the study of how to fight this danger has developed many methods of ventilating.

The difficulty in recent years has not been to construct



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

THE Modern Lath

enables you to do your lathing in one-third the time and provides a stronger and smoother base for the plaster.

NATIONAL PLASTERBOARD

is applied in sheets. It will not warp, buckle or crack. It is fire-proof, saves time in plastering and deadens sound. National Plasterboard makes buildings warmer in winter and cooler in summer, and is inexpensive because it

Requires Less Plaster Than Wooden Lath

Plaster forms a perfect bond with this board and a thinner coat can be applied. Besides you avoid all lath cracks and stains. If desired the cracks can be filled and the Plasterboard decorated in any way desired.

Decide now that you will write for samples and prices of National Plasterboard, the kind that takes the place of either lath or sheathing, and saves the builder money by saving time and material.

NATIONAL PLASTERBOARD CO.
Cleveland, Ohio



Makes The Most Practical Walls

COMPO-BOARD walls and ceilings are ideal from every standpoint.

Strength. They have actually held buildings together in California earthquakes.

Durability. Many still in good condition after 13 years' service.

Fire Resisting. They will hold a fire in check long after a plaster wall would crumble.

Cold and Heat Resisting. Absolutely air-tight; Compo-Board walls as far North as Alaska are known to keep homes comfortable.

Damp Proof. Keep homes dry and sanitary.

Beauty. Their smooth surface is easily and artistically decorated by any method; don't have to be paneled unless desired.

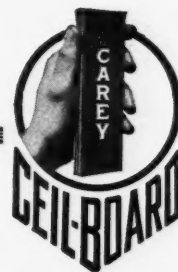
Economy. Cheaper than lath and plaster in the long run.

Saves Time in Building—from 15 to 30 days—no waiting for plaster to dry, no muss to clean up—a more satisfactory job—a pleased client.

Compo-Board is sold in strips four feet wide and one to eighteen feet long, by dealers in most every town.

Write for sample and booklets and learn all about the "modern wall lining."

Northwestern Compo-Board Co.
5777 Lyndale Ave., North :: Minneapolis, Minn.



This Trade-Mark stands for Better and Cheaper Walls and Ceilings

It is the Carey merit-mark for superiority in wall and ceiling coverings.

All the Carey reputation for quality, durability and fair dealing stands back of it.

Beautiful walls and ceilings in buildings of every description all over the country are its best recommendations.

Carey Ceil-Board

with its unique construction—four layers of tough chip board and three intervening layers of pure asphalt cement, is a positive insulator against heat and cold, having four times the effectiveness of plaster and twenty times that of sheet metal.

It will not burn and withstands the flame of a blow torch for 26 seconds without charring; Ceil-Board never chips, buckles or falls off.

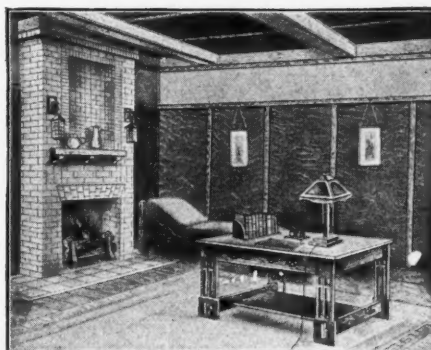
It's a big money-maker for the contractor and builder.

Get our valuable booklet, "Beautiful Walls," and a sample of Carey Ceil-Board; both yours for a post card—send it NOW.

THE PHILIP CAREY COMPANY

58 Wayne Ave., Lockland, Cincinnati, Ohio

Allentown, Pa.	Cleveland	Knoxville	Philadelphia	Spokane
Atlanta	Dallas	Little Rock	Pittsburgh	St. Louis
Baltimore	Denver	Los Angeles	Portland	Syracuse
Birmingham	Detroit	Memphis	Richmond	Toledo
Boston	Harrisburg	Minneapolis	Rochester	Toronto
Buffalo	Hartford, Conn.	Montreal	Saginaw, Mich.	Wheeling
Charlotte	Houston	Nashville	San Francisco	Winnipeg
Chattanooga	Havana	New Orleans	Scranton	Washington
Chicago	Jacksonville	New York	Seattle	Youngstown
Cincinnati	Kansas City	Oklahoma City		



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

ventilating systems but to get people into a proper mental attitude to recognize the value of fresh air sufficiently well that they will insist on ventilated buildings. The great majority do not seem to realize that there can be no such thing as an excess of fresh air. It would be a tremendous task to compute the number of cases of head, nose, throat and lung troubles that are directly traceable to improper ventilation. It is appalling to think of the ailing people, the sick and diseased cattle and the vast loss in money and life all due to an insufficiency of good, pure air.

You carpenters and builders are in a better position to appreciate the value of ventilation than most people and yet ventilation is a feature to which a large percentage of the building profession pay little heed. To the personal question—"Would you insist on keeping your children in an ill-ventilated room; would you keep your cattle in a badly ventilated barn?"—you would probably give the immediate and final answer—"No. I would not."

There is a prevalent disposition to regard this subject lightly, but once people stop to think what it means they become enthusiastic "fresh air fiends."

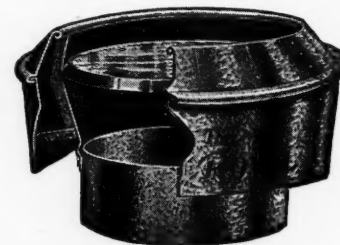
Ventilation is the process of changing the air in any building by removing the foul air and substituting fresh air. No architect, no builder who is vitally interested in achieving a reputation will neglect the ventilating feature in his buildings. What would you think of any architect who failed to provide for a fresh air system in drawing plans for a theatre, a school or a church?

In connection with the present day systems in use, might be mentioned the Royal Ventilators which have elicited much praise from various architects of country-wide fame. A word regarding them.

The sharpened bottom cone offers the least resistance to the ascending column of foul air, smoke, gases, etc., and

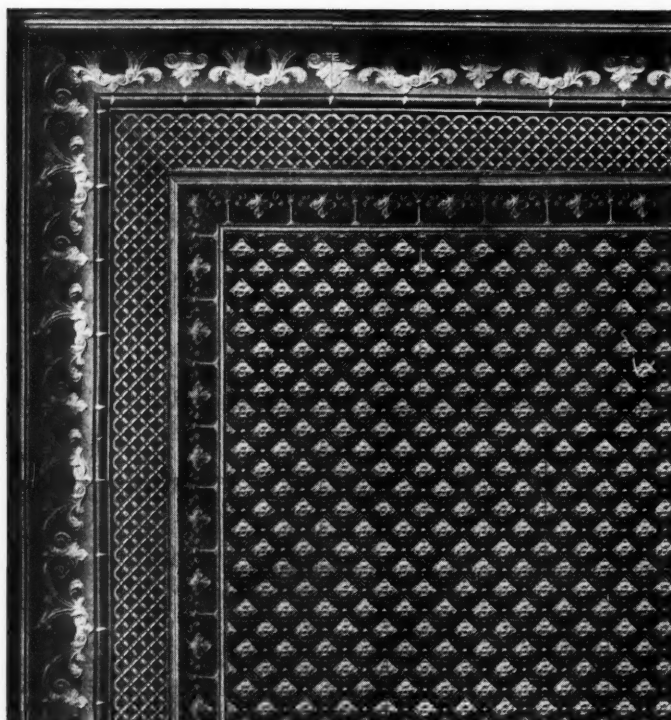
the joining of the two cones eliminates the collection of impure air underneath the top cone, and prevents down draft.

In addition to the double cone, the Royal has two tapered outside deflectors, which deflect the air currents over the top of the ventilator, giving it the greatest pulling power. This ventilator is superior in efficiency and construction.



Two styles of Royal Ventilator

They contain edgewise braces of malleable iron running the complete length of the ventilator head, the edges of the deflectors are wired and the standing seams in the cones add strength and durability. The Royal is really the ventilator for a lifetime and costs no more than any other reliable kind would. Our readers should remember to impress upon their customers that ventilation is necessary in every building. It is something that is self-evident and there's a chance to make a nice commission on every ventilator you install. The Royal Ventilator Co., 417 Locust St., Philadelphia, Pa., have a combination catalog and price list that will be a good one for you to have. It is sent free and you'll find it very useful whenever you want any data on ventilating and ventilators.



Carpenters Contractors and Builders

Here is a chance for you to build up an independent, profitable business for yourself right at home. Many agents are now devoting their entire time to selling our Metal Ceilings.

EDWARDS' METAL Ceilings and Walls

Others have made big profits simply devoting part of their time to selling and applying our Metal Ceilings and Walls. Write us today about your territory. Our business is growing so rapidly that it is necessary to have an agent in every community. The territory is going fast. One day's delay may mean that someone else may be given your territory. Don't Delay. Write today for our special agent's proposition and large handsome catalog of attractive designs.

The Edwards Manufacturing Company,

"The Sheet Metal Folks"

401-417 Eggleston Avenue, Cincinnati, Ohio

Largest Manufacturers of Metal Ceilings, Metal Shingles, Steel Roofing and Siding in the World

Eastern Representatives: The W. H. Daycox, Jr. Co., 81-83 Fulton Street, New York

Branch Office and Warehouse: 1625-1627 Pacific Avenue, Dallas, Texas. J. F. Agnew, Manager

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



STAMPED STEEL TILING

Just the thing for
Bathrooms, Kitchens, Restaurants,
Butcher Shops, etc.

AND ITS RIGHT IN YOUR LINE

Real tile frequently becomes loose and falls off. This cannot. The studding or plaster is first sheathed with narrow, dry boards and the metal put on with small nails.

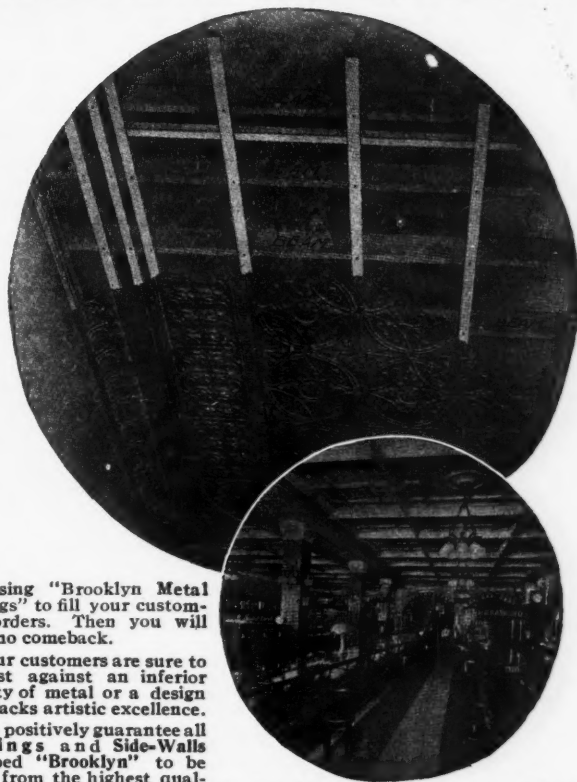
SIX PATTERNS

Furnished with Baked White Enamel finish—or simply prime painted Metal trim Cap Base, Corners, etc., supplied or you can use wood trim.

NORTHROP, COBURN & DODGE CO.

29 Cherry Street, New York

PROTECT YOURSELF



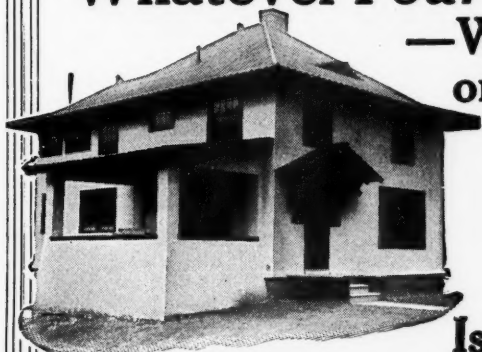
by using "Brooklyn Metal Ceilings" to fill your customer's orders. Then you will have no comeback.

Your customers are sure to protest against an inferior quality of metal or a design that lacks artistic excellence.

We positively guarantee all Ceilings and Side-Walls stamped "Brooklyn" to be made from the highest quality of hammered sheet iron, to be free from rust, and to possess a durability unexcelled by any other make. Our proposition to you is a sure money-maker. Write us and we will give all details.

Brooklyn Metal Ceiling Company 285 Greene Avenue
BROOKLYN, N.Y.

Whatever Your Plastering Problems May Be —Whether for Modest 6-Room Homes or Public Buildings covering an Acre—



Kno-Burn
Expanded Metal Lath

Is the Best Plaster Base Obtainable

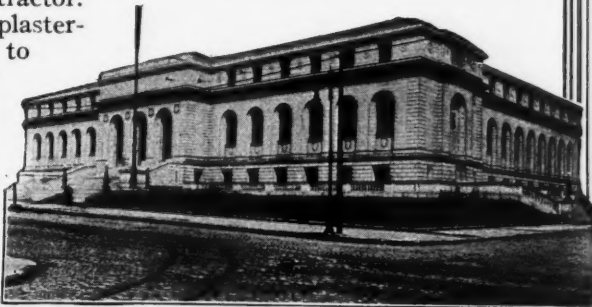
Kno-Burn

- “Keys” the Plaster,
- Prevents cracking,
- Never sags or buckles,
- Saves time and labor,
- Is made from U. S. Standard Gauge Sheets.
- Is shipped plain, coated with carbon paint or galvanized after expansion with prime Spelter.
- KNO-BURN dominates the field.

EVERY house you build is an enduring advertisement of your ability and experience as a contractor.

You can rely upon the plaster-gripping mesh of “Kno-Burn” to make every job a good job and uphold your reputation. With it as a foundation, you are not running any risks.

We are so sure that “Kno-Burn” is good business insurance for you that we want to tell you more about it. Drop us a line for our booklet No. 33. It will give you a world of valuable detail about “The Mesh that makes the Plaster Stick.”



NORTH WESTERN EXPANDED METAL CO.
903 Old Colony Building Chicago, U. S. A.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Vapor-Vacuum Heating
Kriebel System



A Hard Place for Any System to Make Good

Above is shown the residence of Mr. A. T. Baldwin, Grosse Pointe, Mich., about 45 degrees north latitude, exposed on four sides to sweeping winds. Yet

Vapor-Vacuum Heating
(Trade Mark)  **Kriebel System**
(Registered)

is clipping 25 per cent from the annual coal bill here, against seeming odds. The reason is easily comprehended once you know how the system operates.

All steam and straight vapor systems have to burn enough coal to overcome an outside air pressure of 15 pounds to the square inch and, at the same time, force heat thru the pipes and radiators.

VAPOR-VACUUM HEATING (Kriebel System) displaces the atmospheric resistance with partial-vacuum assistance, creating a "pull" on the boiler which holds the heat in the lines with 25 per cent less coal.

These facts are convincing to your customers. Why not get into the field? Many carpenters and builders are making good with this system.

How Our Engineering Department Helps You

You simply send us a rough sketch of some job you are figuring on and, without charge, our Engineering Department gets you up a regular engineering layout of that particular job, to lay convincingly before your customer.

Write for Free, Interesting Book

It explains in the simplest terms just how this system works and shows many pictures of residences, schools, etc., that are enjoying this *guaranteed* 25% coal-saving. You should have a copy of this book, whether you are considering the heating question just now or not. Write for it now—no obligation.

Vapor - Vacuum Heating Co.
895 Drexel Building, Philadelphia

.....CLIP, SIGN AND RETURN.....

Gentlemen:—Without obligating me, tell me how you work with the Carpenter and Builder, and send me your free book

Name.....

Address.....

A. C. B. 9-13

An Automatic Friend

Now what do you think of that? It's a wonder no one thought of it before. And the convenience! Why it saves all the bother of carrying food to and from the cellar and kitchen.

This little Sanitary Automatic Dumbwaiter is to be installed in the kitchen floor. The top lies flush with the floor and one can walk over it. A press of a button or the pull of a lever and the dumb-waiter rises from the cellar right up into the kitchen. It has several compartments. A slight shove returns the waiter to the cellar without jar or bump.



Automatic Dumbwaiter

The Sanitary Automatic Dumb-Waiter is perfectly ventilated; finished inside and out with durable white enamel; all openings are screened. The convenience of this arrangement is apparent. It saves climbing stairs and yet occupies no room in the kitchen; and the cost is so small as to appear trifling. You'll be mighty enthusiastic about this arrangement, for it's one of those little things that go to make a good home better. It can also be used as a strong selling point in disposing of the homes you build for speculation.

Space forbids us from describing the construction of this Dumb-Waiter, but we can say it is good all the way through, and if you write to the York Automatic Dumb-Waiter Works, 639 W. Market St., York, Pa., they'll send you complete description and prices.



The Fulton Pocket Target

A novel little idea this, and one that has met the approval of those using plumb lines. The pocket target is a small, round, white celluloid disc that can be conveniently carried in the pocket. Slots are provided by means of which it can be easily attached to or detached from the plumb line or raised and lowered at will. The diamond shaped cut-out makes the line offer a strong contrast against the white body of the target.

Such an arrangement will be appreciated when sighting in dark or shady places or toward dusk. The plumb line is easily located by using this device. Engineers or those engaged in leveling, laying out foundations or running lines of any kind will find it very serviceable; especially so in places where shrubbery forms a background. It is more accurate and convenient than a flag or a sighting pole. Particulars and price will be given by the makers of the Fulton Pocket Target, —Kolesch & Co., 138 Fulton St., New York City.



"Fulton" Pocket Target



The One Thousand Dollar Poured Concrete House

At Virginia Highlands, a suburb of Washington, D. C., among a group of twenty-five poured concrete houses, there is a small cottage which would seem to fill the great need for better and less expensive houses. Economy in plan, and construction has been the aim, but without sacrifice of permanency, convenience, or an attractive appearance.

Waste Materials Employed. This building is of poured concrete, but instead of the usual gravel or crushed stone, clean coal cinders, a waste product in most sections, has been used in the mixture, cement and lime only being added. This use of cinders reduces cost materially; another saving is effected in the use of steel forms, instead of the usual

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25000 UNDERFEED

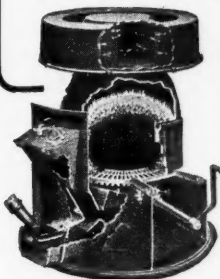
Furnaces and Boilers Cutting Coal Bills $\frac{1}{2}$ to $\frac{2}{3}$

MR. L. GARRICK, Binghamton, N. Y., paid his landlord \$5.00 more rent per month to install an Underfeed. Now he says he saves more than the \$60 extra each year in coal bills and secures greater comfort. The landlord gets \$60 a year—*every year*—more rent for his house *because he has an Underfeed.*

MRS. C. G. YAPLES, Susquehanna, Penna., heated her 14 room house with an Underfeed at a cost for fuel of \$30 for the year. She says it cost her \$60 a year before that to heat six rooms—that now she has a uniform temperature all the time, no gas or smoke, and complete comfort and satisfaction—*because she has an Underfeed.*

MR. HENRY SCHONEBURG, Ft. Wayne, Ind., has had an Underfeed for five years. He says his coal bills average about \$27.50 per year for heating ten rooms, has had no repairs in the five years time and pronounces the Underfeed the best furnace ever made—*and he knows the Underfeed.*

SUCH experiences with users of Underfeeds are the rule, not the exception. Thousands of letters from enthusiastic owners prove it. Every Carpenter and Builder who specifies an Underfeed heater ADDS to the RENTING or SELLING value of the building.



Furnace

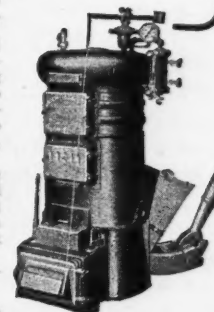
There are over 25,000 Underfeeds now in use, each one returning dividends to its owner of 50 to 65% of former heating cost every year. Is not this worth investigating? Send for FREE Book TODAY. The Underfeed will save \$2 to \$3 on every ton of coal, because the same number of tons of cheaper grades of hard or soft coal will yield as much clean, even heat as expensive grades. All smoke and gases, 50% of heat values, wasted in top-feed heaters, must pass through fire, which

THE PECK Williamson Underfeed FURNACES BOILERS

burns on top, and are entirely consumed, making more heat. No soot-covered heating surfaces; no clinkers; few ashes, least attention. Send us your building plans, Mr. Builder, and we will furnish FREE engineering plans and actual installation cost. Underfeed heaters are adapted for both large and small buildings. Installed in unit or battery form in residences, apartment houses, halls, churches, theaters, schools, etc. Let us send you FREE Warm Air and Furnace Book or Steam and Hot Water Book.

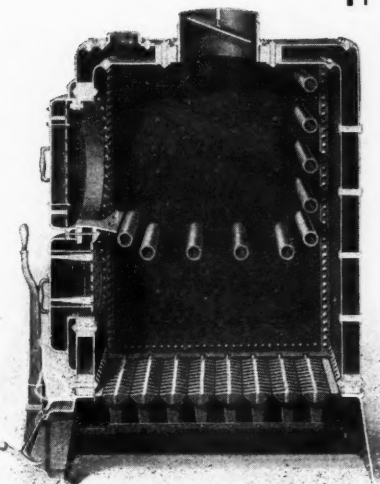
THE PECK - WILLIAMSON CO.

436 W. Fifth St., CINCINNATI, OHIO



Boiler

This is the device that is reducing hot water costs in the best apartment buildings, in hospitals, hotels and restaurants—and it does so by using the garbage for fuel.



KEWANEE

Water Heating GARBAGE BURNERS

are the most sanitary and economical way of getting rid of the garbage and refuse. They should be installed in many of the buildings you build.

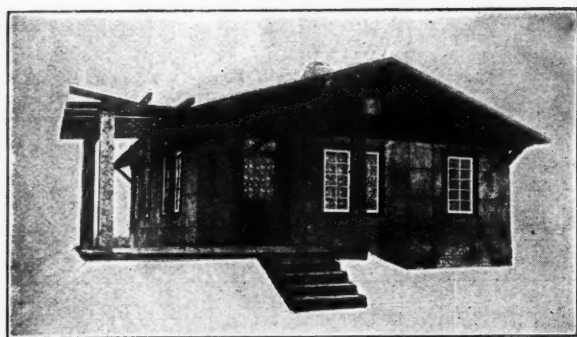
KEWANEE BOILER COMPANY

Kewanee, Illinois

Steel Power and Heating Boilers, Radiators and Garbage Burners

Branches: Chicago, St. Louis, New York, Kansas City and Salt Lake City

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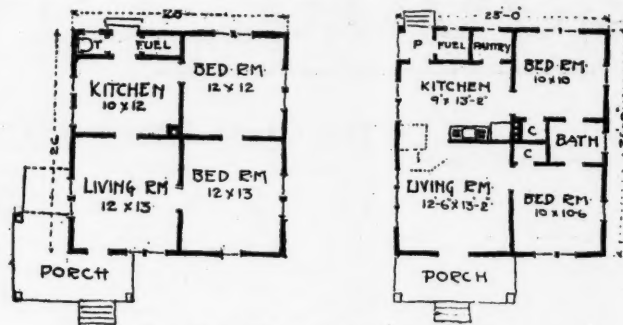
Exterior View of \$1000. Concrete House

wood forms to hold the wet concrete when poured, giving a dense, dam-proof wall construction.

Poured in a Single Day: The rapidity of this new method of house building assists materially toward economy; the forms were put up for the entire house, windows and doors dropped in place, and the concrete was poured in a single day. The following day the wedges were driven out, the forms removed and taken to the next job.

The design of this cottage is striking in its simplicity, planned to give the compactness and conveniences of a city flat; the low pitch permits the use of slag or gravel roofing, making this permanent and largely fire-proof. A unique plan was adopted for the foundation, since the cellar has been omitted. Square holes were dug of proper size and these filled with concrete to the grade level. The steel forms were set up resting upon the earth and extending over these piers, reinforcing bars being dropped in to strengthen the unsupported wall between the piers. The walls are 6 inches in thickness, reinforced with steel bars over and below the windows and doors.

This new method of house pouring has been developed by Milton Dana Morrill, architect, of Washington, D. C., as



Two Floor Plan Arrangements Used

a means of carrying out his plan of permanent, sanitary, inexpensive houses. There has been a great and universal need for better housing conditions, and it would seem that reinforced concrete is likely to do much toward filling this want. Several hundred of these houses have now been constructed in various parts of this country and abroad, and steel form equipment is fast supplanting the more primitive methods of wood forming. The progressive contractor realizes the horrible waste in lumber and labor in wood forming for concrete foundations or for walls, and the steel form equipment in future will doubtless be considered as an indispensable part of the contractor's outfit since this can be used over on hundreds of buildings, being adjustable to different dimensions and designs.

The cost of this house here shown is from \$1,000.00 to \$1,250.00 each, according to local conditions, but as the process is largely one of machinery, several houses must be built at one location to effect the greatest economy.

Write The Read & Morrill Co., 179 Goralemon Ct., Brooklyn, N. Y., for further particulars.



SAVING TIME and MONEY with a

KisselKar Motor Wagon

KisselKar Motor Wagons not only carry all kinds of heavy building material, but are saving time and money in light haulage for carpenters and builders.

Saving time is a vital matter in building operations. Getting the men and tools "on the job" quickly, carrying necessary supplies so the least possible time is lost, being able to reach a half dozen widely separated contracts, without overdriving—these are elements that have greatly to do with the measure of your success.

KISSELKAR TRUCKS

1500 lbs.—1—1½—2½—3½ and 6 Tons

KisselKar Motor Wagons are tested under a rigid system. They have four speed transmission—an engine of tried and unquestioned power and ability—left hand drive and center control—plenty of reserve strength—general construction that will resist vibration. Whether you require a light delivery wagon or a heavy service truck, one of the six KisselKar models will exactly meet your needs.

KisselKar Service

insures prompt and skillful attention to truck owners, offering a definite and liberal service policy, ample and accessible facilities and factory-trained mechanics. KisselKar Service Buildings are at all principal points, where a written and specific service contract is issued with every motor wagon and truck sale.

Send for truck portfolio with hundreds of illustrations of KisselKar Motor Wagons and Trucks in actual use.

KISSEL MOTOR CAR CO.
546 Kissel Ave. Hartford, Wis.

New York, Minneapolis, Chicago, Philadelphia, Milwaukee, Los Angeles, San Francisco, Dallas, Boston, St. Paul, Kansas City, and 200 Other Leading Points

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

100% Solid Comfort**THE SOLAR GRAND**

Heats 3000 Cubic Feet of Space in Zero Weather

A handsome Improved Gas Heater, operating under small expense and giving more and better heat than any other heater known. Perfect combustion; white flame; no odors; NO FLUE NECESSARY; no waste heat; lights without explosion.

WANTED

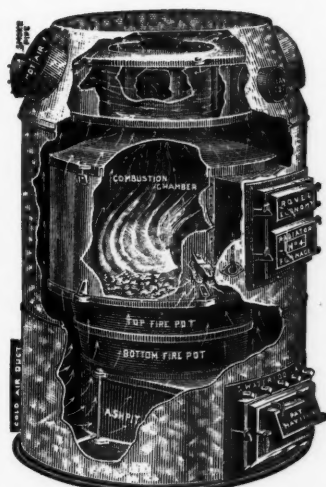
3,000 Carpenters to install the Solar Grand or to act as our agents in every locality.

WRITE FOR PROFITABLE PARTICULARS

SANITARY HEATING CO., 233-37th Street, New York

The Bovee Furnaces

AT

Manufacturer's Prices

Will give every one of your patrons most perfect results. They last longer and actually require about one-half the fuel used by other furnaces.

They are made heavy, of the very best material and workmanship. Take your rule and measure the fire pots, the large combustion chamber and the long travel of heat and compare it with all other furnaces and see **WHY** the Bovee

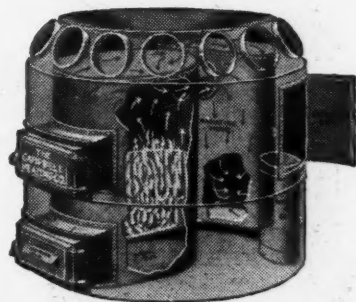
uses less fuel and lasts longer than others.

Get our special prices. We can save you 40% on a heating plant. Any handy man can install them.

Bovee Furnace Works

50 Eighth Street

Waterloo, Iowa



Northwest Bedrooms Warmed to 70° In Zero Weather

If Your Plans Include a Campbell Winter-Chaser

That is a strong statement—but nothing is too strong to say about the Campbell service—and the Campbell heating system. Send for our 1913 Selling Plans which tell all about how and why it is to your interest to insist on the Winter-Chaser. We will send, also, proof that the Winter-Chaser has given marvelous satisfaction in thousands of homes all through the blizzard winters of this cold northwest.

Campbell's Winter-Chaser is the invention of Mr. A. K. Campbell—expert heating engineer. His invention of the Rotary Air Movement has been widely imitated. But the very best expression of this Rotary Air Movement is, of course, found in the furnace which Campbell, himself, made.

You know that good heat from moist, warm air in the house is half the battle for the architect. Comfortable rooms, day or night, good ventilation and warm floors, speak volumes in your client's appreciation of the home. **Your best work is thrown away if the house is cold.**

Send for the booklet "Twice-a-Day" with letters from men whose **grand-children** are enjoying the Winter-Chaser they themselves bought when young. Be sure to get our Selling proposition. Address—

Campbell Heating Company

1221 Walnut Street

Des Moines, Iowa

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



**Easy
to
Install**

**Sure
to
Please**

Good Profit For You

The furnace is not one of the first things you handle in building a house, but it is one of the **first in importance**.

Many builders who have done the best kind of carpenter's work, masonry, plumbing, etc., and who were entitled to the owner's gratitude so far as the structure itself was concerned, have had grief in the end because the heating plant was not right.

You never have trouble of this kind when you put a Kalamazoo in any job you have. We want you to get acquainted with Kalamazoo *quality, service and profit*.

This is the furnace easiest to install—its results are guaranteed—and the saving of jobber's and retailer's profits, expenses, etc., enable us to put better quality into a job and deal with you on liberal terms. We are able to *prove* the supremacy of the

Kalamazoo Furnace

Simplicity of installation is one big point. From a sketch of the house, showing location of rooms, size, prevailing winds, direction the building faces, etc., our expert engineers work out blue prints that are sent you free. These show *everything*—make it all simple. It is the most complete installation service ever devised.

An absolute guarantee of quality and satisfactory use *backs up every Kalamazoo heating system*. The owner *must* be pleased—and that responsibility is ours. Perfect insulation—greater heating surface—fuel economy—complete air circulation; these and other points of Kalamazoo supremacy are *proved*.

There are no unpleasant "come-backs" when you install a Kalamazoo. We are behind the owner—behind *you*—with that strong guarantee and with a system that holds our last degree of confidence because of its known goodness.

Write for Free Book No. 947

telling all about Kalamazoo service—its superior construction. We'll make you liberal terms—show you how the building season of 1913 can be a better season for you from the minute you make up your mind to handle Kalamazoo furnaces. Don't delay. Let us hear from you by return mail and complete information will be sent you at once.

Kalamazoo Stove Co.
Kalamazoo - Mich.

**You make a
good profit—
and a good
friend — and
"booster"—
whenever
you place a
Kalamazoo
Furnace.**

"A Kalamazoo
Trade Mark Registered **Direct to You"** **And Gas Stoves Too**

Motor Buses Profit By Traction Dispute

As a result of a transit war between a Socialist administration and an obdurate street car company, a new bus line in the city of Schenectady has had a rapid-fire growth. Beginning its service last April with one White 22-passenger bus, the operating company has purchased a new White every month and carried over 182,000 passengers in four months. Each bus has carried 24,000 passengers per month. The bus line had its inception in the refusal of the city to grant franchises for trolley extensions until the traction company restores six-for-a-quarter tickets.



Value of Trim Wood

The value of wood used for interior trim is governed by two qualities inherent in the wood. There are: Texture or composition, and figure or marking.

There almost is as much difference in the woods used for interior work as in the character and disposition of the men who do the work. Not only is this true with regard to different kinds of woods, but to different pieces of the same kind. No two of them are just alike.

It has been the common thought of lovers of the beautiful that the trim for an opening should be matched either in the planing mill or by the man who fits it in place. There is unconscious protest when a light piece of wood is used between two dark pieces, the question, silent or audible, is: "Why did they not use all that dark wood for one opening and all the light wood on the next."

The carpenter may or may not have thought of selecting for color or figure, he may not have had the time, or he may not have been able to make changes because of the variation in sizes.

The general practice of using members of trim that are inharmonious is another argument in favor of the more extended employment of Arkansas soft pine for interior wood work. This wood is uniform in color—more nearly so than any other kind of lumber, perhaps—is heavily and beautifully figured, of even texture so that the stain, dye or filler used gives an even tone to the finished trim.

The exercise of a little taste and judgement on the part of the workman, however, will give a room finished in Arkansas soft pine a much finer appearance than its indiscriminate use.

Builders who have used "yellow pine" for interior trim can have no appreciation of the wonderful variety of beautiful figures an ordinary run of Arkansas soft pine will show. This is not said by way of disparaging other varieties of southern pine, but to emphasize the now well known fact that Arkansas soft pine is claimed to possess the best figure and also is the highest type—texturally—of all the soft woods. Some idea of its range of figure may be secured from the accompanying illustrations, showing marking of different design.

Figure ranges from plain design to curly pine. The straight grain that is easy to work should be employed for outside trim and for those rooms and portions of the building, such as kitchen, bath, pantry, that are to be painted. The more highly figured wood should be used in the living and dining rooms, bed rooms, halls, etc.

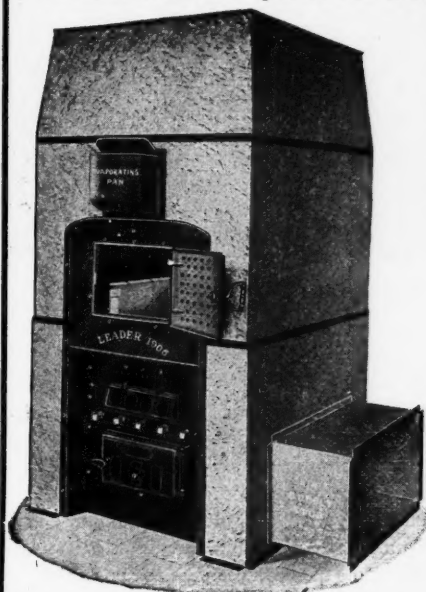
Separation for figure will occasion very little expense, will result in a much better appearing building, one that will serve as a continual advertisement for the builder and the concern that supplied the material.

That is another point in building that many contractors and carpenters appear to overlook. A building and every detail of it serves as a constant advertisement for the man who built it or the architect who designed it. It advertises his knowledge and care or their absence to all who behold the work. After a careful tour of inspection, the visitor

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

FURNACES

YOUR furnaces are costing you too much, and a good share of the cost goes where it does not add to the value of the heater. Furnaces generally are made "for the trade," and one or two middlemen must have a profit besides the manufacturer. The contractor and consumer pay the profit and receive no benefit for that portion of the price.



We Are Manufacturers and we sell direct to contractors and consumers. We save you a lot of money, but we accomplish more than this, for we study the plan of your house, and we furnish you, besides the furnace, a drawing showing just how the work should be arranged; just what size of pipes and registers should be used, and where to put them, and when we have done this, and you have carried out our plan, we guarantee that the furnace will warm your rooms comfortably in coldest weather. We back up that guarantee with an agreement that your local banker may hold the purchase money until you have tested the equipment and proved that it is satisfactory, then the money is sent to us. If the furnace does not please you it may be returned at our expense for freight both ways, and your banker will hand back your money.

There never was a more liberal nor fairer offer than this. We take all of the risk; we sell to you at a price which saves you the middleman's profit; we plan the arrangement of your house; we give you full directions for setting up and installing, and loan you any tools you need, and then we wait for our money until you have tested the equipment and know that it is going to please you.

Send us a sketch of any house you want to heat, and we will tell you what it will cost, and we will show you by a complete plan we will send with our bid just how we would arrange the work. You don't have to buy our furnace, and our proposal puts you under no obligation. If it doesn't look good to you, buy something else, and we won't feel hurt.

We are selling thousands of furnaces in this way, and our customers come back to us again and again. We can refer you to customers who have bought direct from us in this manner in almost any neighborhood, from Alaska to Florida.

Now let us hear from you and let us show you what we can do. We issue a forty-eight page booklet on furnace heating. Send us your name on a postal card and we will mail this booklet to you without delay.

Hess Warming & Ventilating Co., Tacoma Bldg., Chicago, Ill. 1220

Money Talks!

*And this space costs money,
so here is OUR STORY*

We will furnish our customers complete equipment including furnace, pipes, registers, etc., at the following prices for ordinary sized houses:



5 Room House,	\$60
6 Room House,	\$70
7 Room House,	\$80
8 Room House,	\$90

No good business man will pay more.

All that you need to know is that it will be an "IDEAL" Heater.

Guaranteed for 10 years and will last a lifetime. Our enormous output enables us to make this offer. 30,000

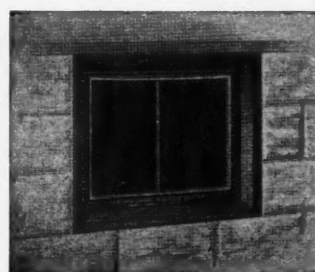
Ideal Furnaces in use. Actual output 9,000 annually.

**WE SPEND OUR MONEY IN MAKING GOOD FURNACES,
NOT IN LARGE ADVERTISING SPACE**

Special Proposition for Contractors.

Catalogs and Details for the Asking

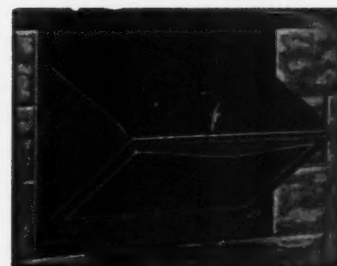
IDEAL FURNACE CO., DETROIT, MICH.



The Window Chute

A Real Window—A Perfect Coal Chute

Useful 364 days in the year for light and one day for the coal man



A Burglar-Proof, Air-Tight Window which conforms with architectural lines. Looks best and is best. Write for booklet giving full description.

Holland Furnace Co.

Dept. "A. C." :: Holland, Mich.

—"Holland Furnaces Make Warm Friends"—

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

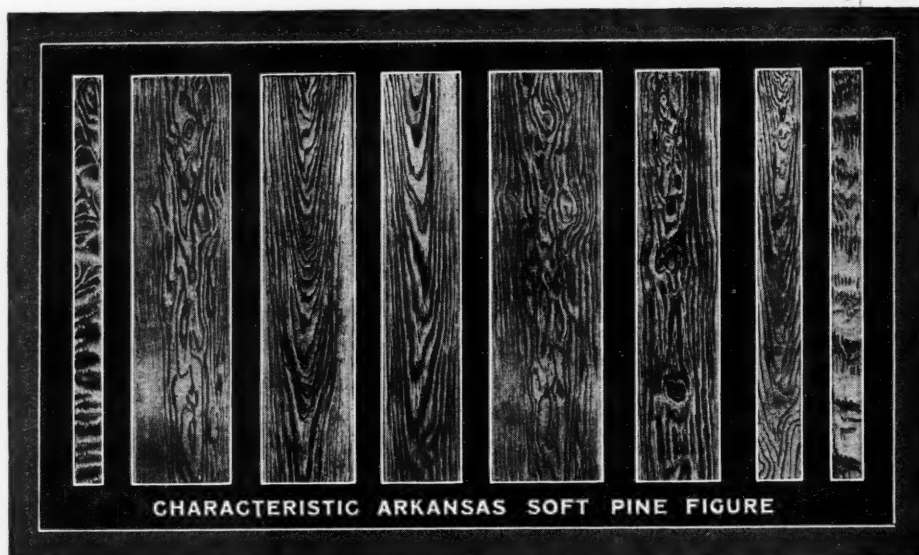
almost always inquires: "Who built your home?"

It is the small things that count with such an inspector—the small things that stand out and command attention because of their incongruity, or their absence which give to the beholder a pleased sense of satisfaction in the work.

It is the small things that count most, anyway. The mere insistence that Arkansas soft pine be used and that the wood be treated properly may—it usually does—mean the difference between a building that pleases the beholder and one that offends.

With a little care in selecting Arkansas soft pine for trim, the contractor and the carpenter can make this wood an even factor in his individual success.

Leaving this phase of the subject there is another advantage arising from the use of Arkansas soft pine which the contractor cannot afford to overlook. Breakage or wastage of trim especially milled for a house may occasion great delay, it being necessary in many cases to send to the concern that furnished the millwork for sufficient material to finish the job. Work is stopped, the owner loses the use of the building and the contractor the use of the money its completion will bring him; the decorations are at a standstill—everybody is forced to wait until the trim is secured and installed. When Arkansas soft pine is used the local dealer can furnish lumber to make good the shortage. It



Panel of Woods Showing Grain

can be secured on a few hours' notice and the building finished, turned over to the owner, the money collected and used long before the job can be finished where it is necessary to wait on a planing mill.

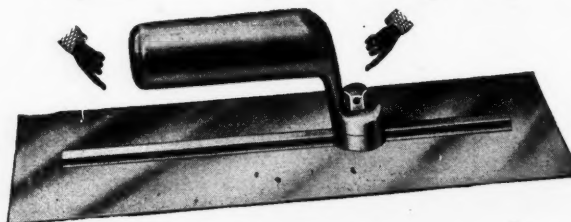
Arkansas soft pine manufacturers have established a bureau for the convenience and use of their friends in the building trade. It is hoped that contractors and carpenters will use this bureau freely and consult it whenever occasion arises. The assurance is given that all inquiries will be answered promptly and as completely as possible. The address is: Arkansas Soft Pine Bureau, 308 South Canal Street, Chicago, Ill.

One Man Does Six Times as Much Work



with our Standard Long Handled, Cement Finishing, Spreading, Surfacing, Grooving and Edging Trowel. **Let us prove this to you by sending you one to try.** Your money back if you want it, is our guarantee. It has no "up and down" or "Pump handle" motion, just a simple twist of the wrist and a push and a pull does the finest work you have ever seen. You can stand erect and finish from any point, curbs, porches, steps, cellars and floors of any size, etc., spread the batch and level it down. Made of the best steel, two sizes, 24 inch and 18 inch blades. **Price \$8.00—Sent on Ten Days Free Trial.**

THIS IS OUR STANDARD Adjustable Handle Finishing Trowel



Thousands of Cement Workers Tell Us

that it's the best made. These users know from experience

The handle can be instantly adjusted to any desired position on the blade. It has an aluminum handle, easy to grip. The blade has twice the wearing quality; it's reversible. Blades made of finest steel and can be replaced at any time. Made in two sizes, 11½ inches, price \$2.50, 14 inches, price \$3.00. Special sizes made to order. **Let us send you one by Parcel Post to try.** Your money back if you desire it, is our guarantee.

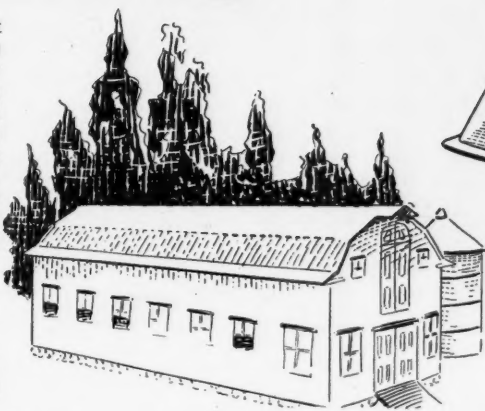
STANDARD TOOL & MFG. CO. - 444 Industrial Bldg., INDIANAPOLIS, Indiana

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Put Them On All Your Buildings

Authorities say that perfect health in people or animals is impossible without plenty of fresh air. Our children need fresh air in the school room; workers in stores and factories need fresh air; churches, theatres, homes, barns, etc. should have arrangements for supplying fresh air in large quantities. You will find that

ROYAL VENTILATORS



furnish more fresh air and exhaust more foul air per minute than any other kind. The process of ventilation by the Royal Ventilator is continuous. It goes on day and night regardless of weather conditions. The Double Cone, Pointed Bottom Cone and Deflector are principles that make the Royal Ventilator a positive success.

Royal Ventilators are shapely and an ornament to any building. They will not rust; are storm-proof, wind-proof; and no rain, sleet or snow can enter the building through them.

Put Royal Ventilators on all your buildings and learn what successful ventilation means. Our FREE CATALOGS will explain in a nice clear way what makes the Royal so successful.

Send us a Postal Card today and we will send the Catalogs

ROYAL VENTILATOR COMPANY, 417 Locust St., Philadelphia, Pa.

BUILDERS—Save Time and Labor

By taking advantage of a great improvement over Cornerboards and Time consuming Mitre Corners.

MERWIN METAL BUILDING CORNERS

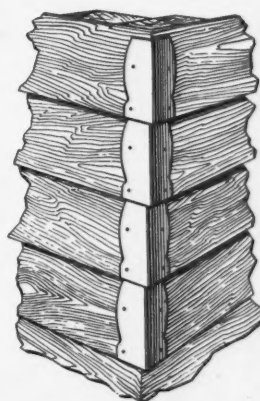
Take the place of Cornerboards, thus saving cornerboard material, time and labor of fitting clapboards to same. Also, just the thing for mitre-corners—no beveling, mitreing or fitting required, even ends of clapboards need no squaring.

Merwin Metal Corners leave no exposed joints to open up or warp, are easily and quickly applied, cheap in price and pleasing in appearance, will out last the building.

**Free Samples and Prices
mailed on your request.**

MERWIN MANUFACTURING CO.

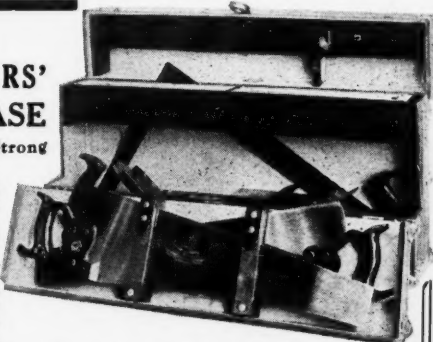
ERIE, PA.



Indestructo CARPENTERS' TOOL CASE

Neat, Light, Strong

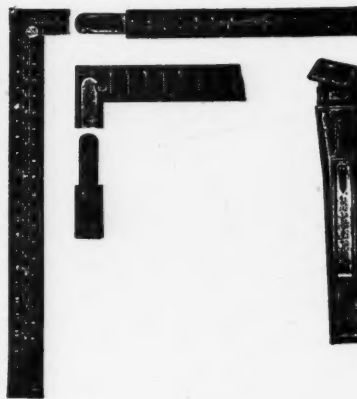
Suitcase style. Saves carrying a heavy tool box. Made of 3 ply veneer covered with heavy canvas and painted. Edges and corners bound and reinforced with steel. Two brass catches and lock. Made in two lengths—31 ins. and 33 ins., for 26" and 28" saws. Has a place for every tool.



Handsome and indestructible. Special sizes to order.

Write for Price List.

WEDELL & BOERS, 157 Jefferson Ave. Detroit, Mich.



This is the
**Standard
Take Down
Square.**

It makes
good with
the user.

Send and
know
more about it.

**Southington
Hardware Co.**
Southington, Conn.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



"Lend me your Pike"

"I've been fussin' around with oilstones since I was knee high almost, but until I used your Pike India this morning I never knew how fast a **good** oilstone could sharpen. First chance I get I'll buy a



PIKE INDIA OILSTONE

Good carpenters are just as careful about buying an oilstone as they are about buying tools. They need to be—because tools are too expensive to risk ruining on a poor oilstone.

In big machine shops, carpenter shops and manual training schools throughout the country, Pike India Oilstones are forcing other stones into the discard.

That's because no other stone that cuts as fast as Pike India wears down so slowly, or holds its shape so well. A Pike India Oilstone doesn't groove, and if properly oiled, positively will not glaze. Even dropping won't break one.

The most useful style is the Pike India Combination Oilstone—size 7x2x1, with one side coarse, the other fine, \$1.00. The same stone in a strong hardwood box, \$1.25. Pays for itself in the time it saves and lasts longer than two cheaper stones.

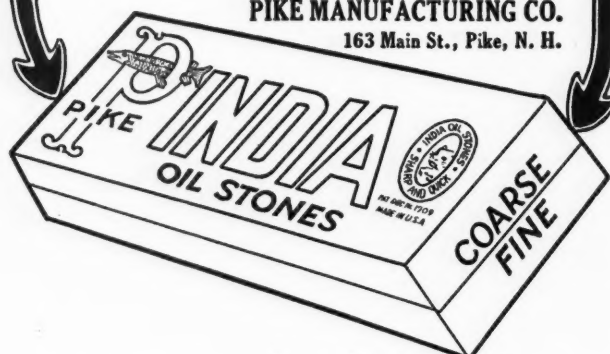
"Pick a Pike"

Every Pike Stone is GUARANTEED. Insist upon the Pike trade-mark. Your hardware and tool dealer will show you the Pike line, which also includes the best built and most satisfactory tool grinders. Ask your dealer to show you these grinders also.

FREE—A Pike India Stone Send us your dealer's name and 4c for packing and mailing, and we will send you a Pike India Vest Pocket Stone for pocket knives, etc., just to show you how fast all Pike stones sharpen. We'll include our famous book, "How to Sharpen"—tells how to get a good edge on knives, tools, etc., and how to select and care for oilstones. You'll be pleased. Write today.

PIKE MANUFACTURING CO.

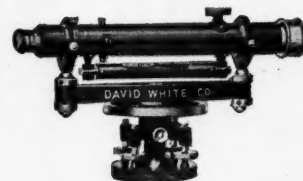
163 Main St., Pike, N. H.



Accuracy in Building Construction

It is generally conceded that the most particular work about the building consists in getting it started right. Where there are a number of footings to be put in and where there is any structural iron work or stone setting, it is important that the preliminary work be laid out with great accuracy.

The improved level which the David White Company, 419 East Water St., Milwaukee, Wisc., have recently placed on the market is especially designed for the use of the contractor and builder.



The powerful telescope on this level will detect an error of 1/16th inch in 300 feet. While this may seem a case of extreme accuracy, yet it is just as well that the contractor be prepared to show the architect as well as his client that he is putting up the building absolutely right. The average owner is very favorably impressed when he sees the contractor laying out his work, checking up his levels, etc., with an instrument such as Whites improved level. It shows the contractor to be anxious to have his work right and to be able to use instruments which will give accurate results.

The use of an instrument of this character appears to the uninitiated to be one requiring great skill and training. While care is necessary, there is nothing about this level which will prevent the ordinary carpenter or contractor from using it correctly, in fact with little more skill than is required to use the ordinary old-fashioned carpenters' spirit level, while the results as above detailed are far more accurate.

Circular X, which describes this level in detail as well as the variety of work for which it is adapted, contains also full particulars, instructions for use, prices, terms, etc. Write for this circular.



Youngstown Plant of the Trussed Concrete Steel Co.

This extensive plant of the Trussed Concrete Steel Company at Youngstown, Ohio, is devoted exclusively to the manufacture of steel products, such as United Sash, Kahn Trussed Bars, Hy-Rib, Rib-Lath, reinforcing steel and other building specialties. The waterproofing and finishing products of this Company are manufactured in a separate plant in Detroit, while tile plants and warehouses are located in various cities of the country. The main executive and sales-offices are located in Detroit with representatives in all principal cities.

Six years ago only a few small buildings made up this entire plant. Today the factory and yards cover over the greater part of twenty-five acres of land. The plant consists of an administration building, power-plant, shipping yards, and a large number of individual buildings in which the various products are manufactured. At the extreme left of the bird's-eye view is shown a portion of the shipping yards for the Kahn Bars and reinforcing steel, containing large cranes, stock yards, cut-off presses, etc. The shearing of the Kahn Bars is done in adjoining building.

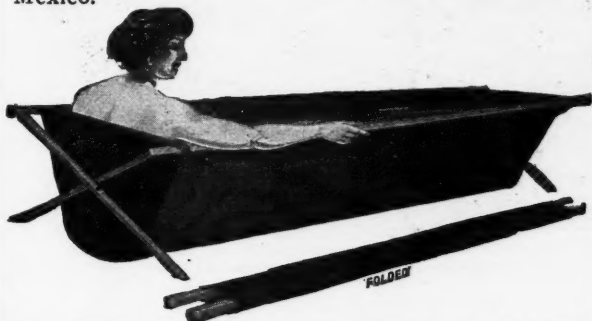
The Rib Bar Department is in close conjunction with the Kahn Bars, and is completely equipped with shearing presses, bending machines, locomotive cranes, etc., to supply the rib bars in any form desired.

The buildings for the Hy-Rib and Rib-Lath manufacture are the next adjoining and are provided with railroad siding, loading platforms, etc., for shipping purposes. In these buildings the flat sheets of steel are first especially prepared, beaded, trimmed and made ready for the punching press, which with special dies, cuts the material as described. The sheets next go to the heavy forming presses, which by a process of press-

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

AGENTS \$45 to \$80 a Week

Thousands of dollars paid to agents already in the field. Will Gunkel of Ohio, got \$240 worth of orders first week. A. Bernider, of Kansas, made \$30 in four hours; made 8 calls, took 6 orders. Weil, of Mo., made \$10 in one hour. Hamilton, of Wyoming, made \$60 first two days. We want good agents in every county in the United States, Canada and Mexico.



New Invention. Just out. Nothing like it. Folding Bath Tub. Gives to every home a complete bath room in any part of the house—without expense. Biggest, quickest, surest money-maker of the century for agents. Territory being rapidly assigned. Send your application today.

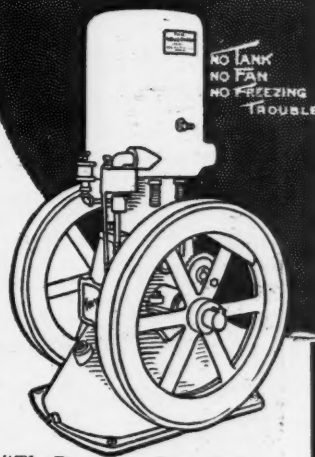
100% Profit. We back you with our capital and experience. We give you complete instructions, assistance and co-operation. No charge for territory. Don't delay. Send your name at once. Write plainly and give name of your County. Complete particulars FREE. Write today.

Robinson Mfg. Co., 211 South 15th Street
TOLEDO, OHIO

The Engine that is Always on the Job soon Saves its Cost

In the daily grind of contract work the minutes saved by uninterrupted power soon run into dollars. It is the steady, always-on-the-job characteristics of the

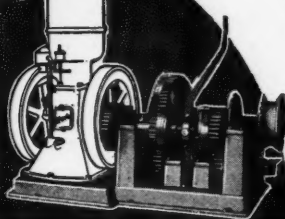
NOVO ENGINE



"The Engine for Every Pur"

in addition to its extreme lightness and portability that make it invaluable in every branch of contract work. It frees a contractor from the expense of the experienced engineer and from the draw-backs connected with steam or electric power. The Novo can be run by anyone. Everything is self-contained. It is the lightest engine for power developed. 10 sizes; 1 to 15 h. p.

Novo
Hoisting
Rig



Send for Novo Catalog and learn the "why" of Novo superiority.

NOVO ENGINE CO.

CLARENCE E. BEMENT
Sec'y. and Gen'l. Mgr.

236 Willow St.
LANSING MICHIGAN

PETE TEACHES THE YOUNG TO USE CARBORUNDUM SHARPENING STONES

PETE'S first advice to the budding carpenter or the student craftsman is: "Learn to take the proper care of your tools, so, first of all, get a good oil stone. Get a stone that will cut the edge on the tool, not one that rubs it on. A stone that will cut quick, hold its shape, and not glaze."

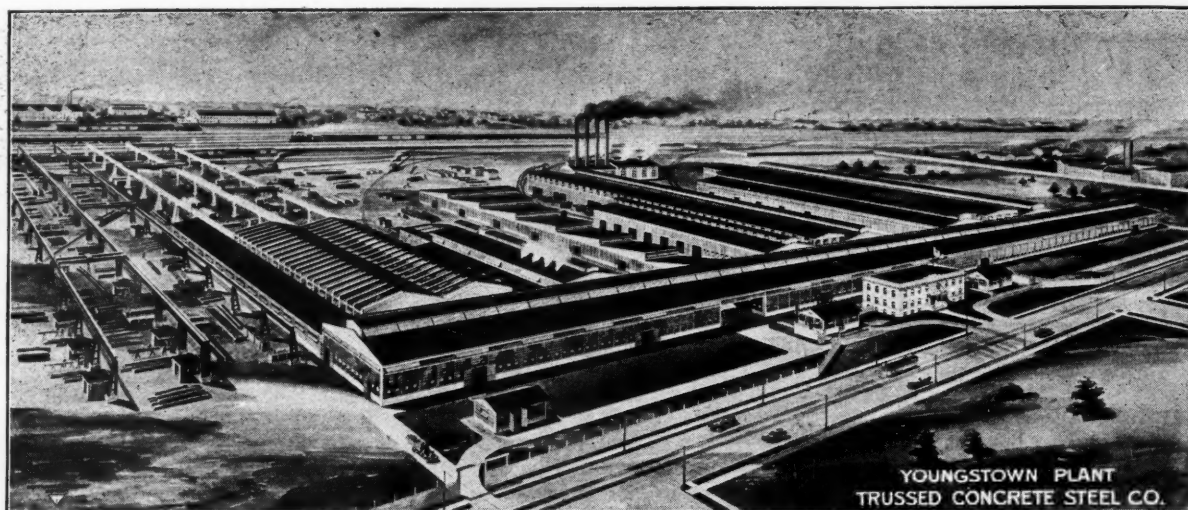
The experienced workman, too, should heed Pete's advice. He means a Carborundum Sharpening Stone. Ask your hardware man to show you the rectangular or the round combination Carborundum Bench Stone.—They are the greatest stones for all around work you could ever put in your kit. For your gouges, get Carborundum gouge stones.

FROM YOUR HARDWARE DEALER
OR ORDER DIRECT

The Carborundum



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



The Trussed Concrete Steel Co., Detroit, Mich., Maintain this Extensive Plant at Youngstown, Ohio

ing and expanding develops the product into its finished form. The Hy-Rib material is also finished by the shops in curved sheets, the curving being done with special bending machines.

The United Sash Department includes a large number of buildings, owing to the great demand for this product, and the amount of space necessary for its manufacture.

In the Floredome and Floretype division, which is one of the recent developments, are manufactured deeply corrugated steel domes and tiles for use in floor construction in place of terra cotta tile. These are pressed out under special dies and powerful presses to the desired form.

The machine shop in conjunction with the plant is com-

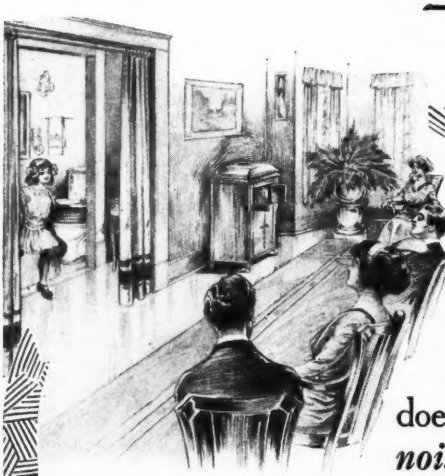
pletely equipped to manufacture all the various dies and tools necessary for the manufacture of the Kahn Building Products.

The general construction of the buildings is along the most modern ideas of fireproof and daylighted factories. Practically the entire side-walls are made of United Sash with a small curtain wall underneath of Hy-Rib concrete construction.

This plant of the Trussed Concrete Steel Company is an excellent example of modern efficiency, both in equipment and construction. The General Executive and Sales Offices of this Company have their headquarters in Detroit, Michigan, while the steel manufacturing plant is located at Youngstown, Ohio, for its convenience of the steel markets.

"Silentflow"

A Noiseless Water Closet



"SILENTFLOW"

Water Closets are the results of years of study of home builders' requirements. You will be quick to see the desirability of a closet that flushes without noise and does away with the *hissing caused by a noisy Water Closet.* :: :: :: ::




L. WOLFF MANUFACTURING CO.

MANUFACTURERS OF PLUMBING GOODS EXCLUSIVELY
THE ONE LINE THAT'S COMPLETE—COMPLETELY MADE BY ONE

General Offices, 601-627 W. Lake Street. Showrooms, 111 N. Dearborn Street
CHICAGO

BRANCH OFFICES

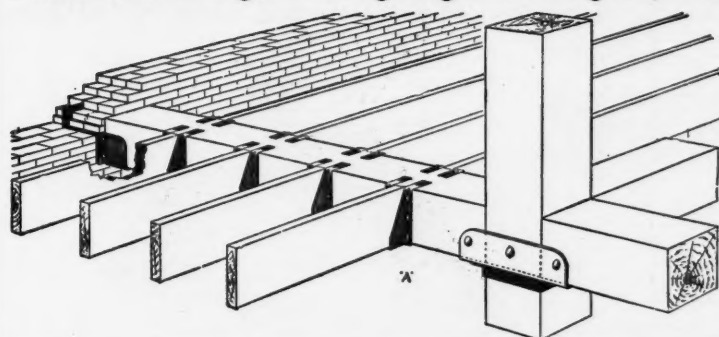
Denver, Colo.	Trenton, N. J.	Omaha, Neb.	Minneapolis, Minn.	Dallas, Tex.
Rochester, N. Y.	St. Louis, Mo.	San Francisco, Cal.		
Washington, D. C.	Cincinnati, O.	Cleveland, O.		
	Kansas City, Mo.			



Our Trade Mark is
Your Guarantee

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Plan of Framing Showing Regular Hangers, Wall Hangers and Three-Way Post Cap



We are aware that cast iron has generally been adopted for post caps and bases in this kind of work. The architect or engineer is never certain what the strength of cast iron will be, owing to flaws or uneven shrinkages, which often cause trouble after the strain is applied. With steel of good tensile quality no risk is taken, and the difference in the weight of the steel necessary to sustain the load required and the cast iron as usually made, renders the cost of the steel about the same as the cast iron, with all the advantages in favor of the steel, not only in appearance but in every other possible way. **High grade steel only is used in our Hangers and Post Caps.** The additional security of steel fittings for this work is apparent without argument.

THE VAN DORN IRON WORKS CO.
2687 E. 79th Street, CLEVELAND, OHIO



BUILDERS!

WEATHER VANES AND LIGHTNING RODS

can be used on almost every building. They are attractive, as well as useful.

We make all styles of vanes, church crosses, flag poles, lightning rods, finials and cresting, emblematic signs, interior indicating vanes, copper balls, etc. Special prices to the trade.

Write for Catalog.

Thomas W. Jones 155 Maiden Lane, New York

Reinhardt Profile Gauge

A NEW TOOL

for outlining all irregular Curves or Shapes. Invaluable for Builders, Carpenters, Woodworkers and Patternmakers.

FOR EVERYBODY WHO MEASURES ANYTHING!

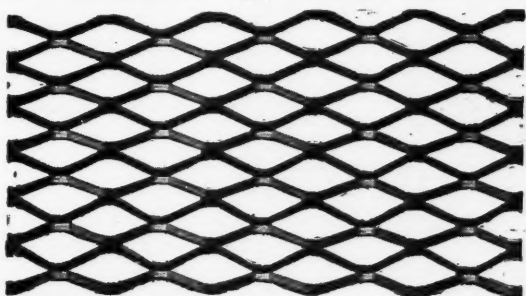
Style A—2" 30c., 3" 45c., 4" 60c., 5" 75c., 6" 90c.

Style B—Heavier side plates rods 4 1/2", 8", \$1.60; 10", \$2.00; 12", \$2.40; 14", \$2.80.

Send 15c. for sample. It will show just what the gauge will do.

Satisfaction Guaranteed or Money Refunded

WARREN PROFILE CO., 103 Chambers St., N. Y.



SYKES METAL LATH

Entirely Different and Better

Sykes Expanded Cup Lath is thoroughly dependable for any purpose. The width of the strands make it especially rigid

SYKES EXPANDED CUP LATH

and assists in forming a quick and perfect key. The sheets are uniform in width and length; both sides alike.

FOR STUCCO WORK this lath has no equal. It is *self furring* and you get a perfect key when nailed directly to sheathing boards or where passing over studding without the use of furring strips. It is cut with a wider strand and weighs more to the square yard than other laths on the market in the same gauge. Its formation is such that it becomes thoroughly imbedded in the mortar, bracing it from all directions, practically making a reinforced concrete wall. This lath is made in sheets 18x96 inches; packed 20 square yards to the bundle. It is made with Anti-rust coating, Painted Black or Galvanized in the following gauges: 27, 26, 25 and 24.

Proved by Use --- Durable and Cheap

Sykes Trough Sheet Lath has been successfully used for all kinds of plaster work and on every character of building. It has corrugations running the entire length of the sheet. This, together with the unusual design and shape of the trough makes it the strongest sheet lath on the market. It keys perfectly. It is made with Anti-rust coating, Painted Black or Galvanized. Size of sheets, 13 1/2", 15 1/2", 18 1/2" and 23 1/2" wide by 96 inches long. This lath is easier to erect, easier to plaster on, and saves mortar over any Metal Lath on the market.

Though our factory may be far distant from you, our prices will enable you to order Sykes Metal Lath with good advantage to yourself. Besides, you get a broad assurance of Quality and Fair Dealing.

Write us to send you Full Description and Samples

THE SYKES METAL LATH & ROOFING CO., NILES, OHIO



SYKES TROUGH LATH

You will get **SPECIAL ATTENTION** if you tell Advertisers you read American Carpenter and Builder.

What Contractors Need Most

The contractor has many more details and worries than other business men. In consequence he does not always pay enough attention to the selling end of his business. Yet the securing of signed contracts in good numbers is the foundation of a paying contracting business.

What the contractor needs most is to devise ways and means to get business—he needs to be more of a salesman.

One of the easiest ways to interest the prospective home-builder, and especially his better-half (who so often speaks the final word) is to be ready and glad to furnish the numerous specialties now so widely advertised in the magazines.

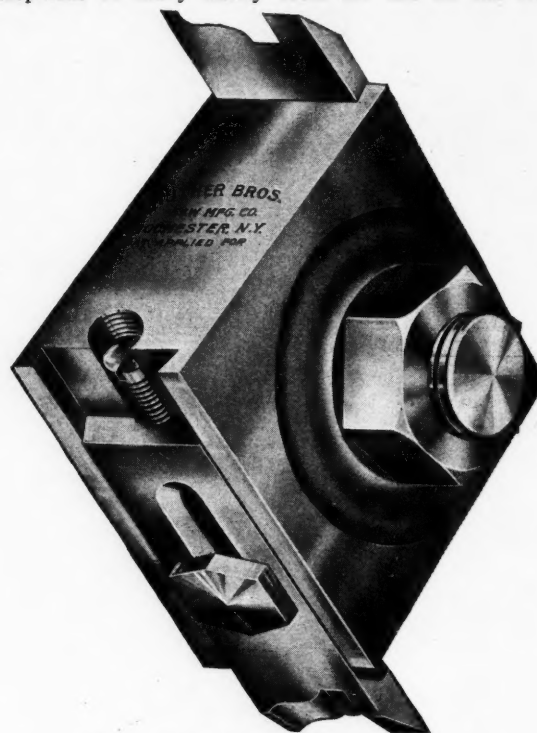
By showing this readiness and up-to-dateness the contractor stands out separate from the many who are after the prospect, and demonstrates that he is progressive and mentally alert.

Good Housekeeping Magazine publishes a quarterly, "Good Storekeeping," devoted to the question of handling nationally advertised products, and will be glad to send it free to any contractor, builder or architect on request. There is much of interest in it to every man in these lines of business. Please address:

Dealers' Service Department
Good Housekeeping Magazine
 115-D West 40th St., New York

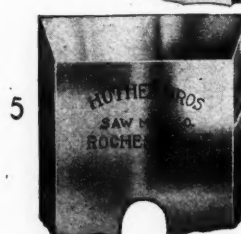
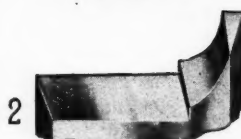
New Devices for the Saw Mandrel

Huthier Bros. Saw Mfg. Co., 1101 University Ave., Rochester, N. Y., have devoted considerable attention to the development of many handy tools for use on the circular



This Cutter Head Fits any Saw Mandrel

saw mandrel. The saw table of itself is somewhat limited in its scope but with the addition of an attachment or two, it is possible to perform many different classes of work.



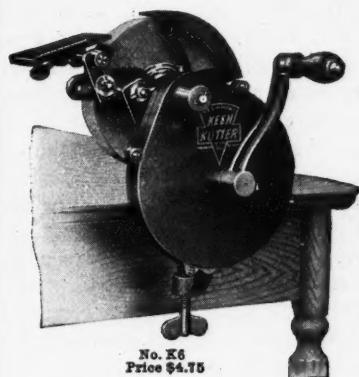
Knives to Use with Cutter Head

The cutter head and special knives here shown is one of the specialties that can be used on any ordinary saw mandrel. The knives are adjusted to a gauge by the use of headless set screws and securely fastened by a hexagon head bolt. The regular cutter head is made so that the cutting edge of knife is $2\frac{1}{4}$ inches wide. This cutter head is used for jointing and sticking mouldings on the saw table.

Other attachments—a bevel face shear tooth saw for example, will make regular mouldings. Then there are special saws for slotting joints for window sash, etc. Any carpenter who owns a buzz saw and wants to increase its efficiency, will do well to consult Huthier Bros., who are well-known for the reliability of their products and their standing in the manufacturing field. Special blue prints will be furnished carpenters to enable them to order attachments more easily and to assist them in placing the attachments on the saw. Free advice and catalogs are also part of the

benefits to be derived from writing this company.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



No. K6
Price \$4.75

A Tool Grinder for Good Tools

You run no chances of spoiling a good plane, or chisel, or hatchet, if you have a tool grinder bearing the famous trade mark

KEEN KUTTER

Geared to obtain a high cutting speed for the grinding wheel with least possible friction. Gearing entirely closed to keep out grit and dust, insuring long wear. Equipped with corundum grinding wheel. You risk nothing when you buy a Keen Kutter tool grinder—it is guaranteed satisfactory or money back.

"The Recollection of Quality Remains Long After the Price is Forgotten."
Trade Mark Registered. —E. C. SIMMONS.

If not at your dealer's, write us.

SIMMONS HARDWARE CO., Inc.

St. Louis New York Philadelphia Toledo Minneapolis Sioux City Wichita



WINTHROP

Tapered

Asphalt Shingles

Made at ARGO, ILLS.

—By the—

Winthrop Asphalt Shingle Co.

Sales Office: Room 1414, 19 So. La Salle St.
Chicago, Ill.

DO YOU
KNOW
ABOUT

Utility

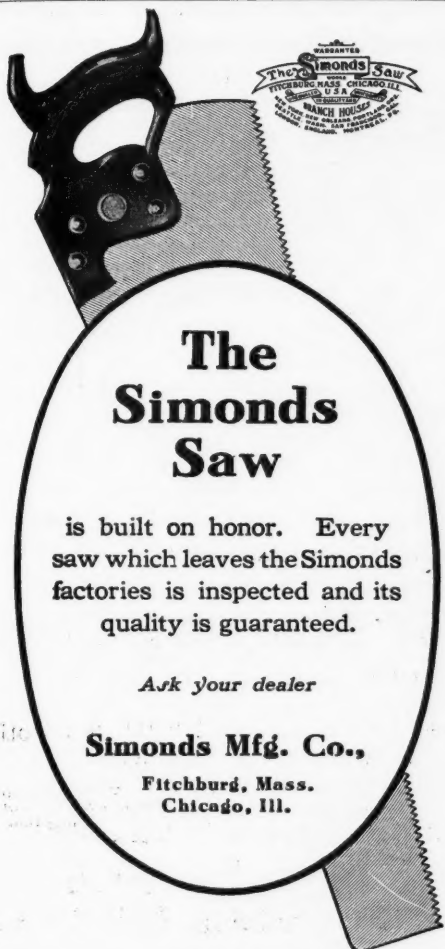
PAINT PRODUCTS?

Do you want to place yourself in position to buy high quality goods at wholesale? There is a logical reason for this offer. Here it is:—This company is owned by hardware and paint dealers. We employ no traveling men because each dealer buys from the company in which he is financially interested. This economic business arrangement enables us to manufacture higher quality paint at a lower cost to our dealers.

If you are located where we have no representative, we will give you our dealers confidential prices.

Are you interested? Of course you are.
Write at once for further information.

The Purcell Paint Mfg. Co., Dept. C, Elyria, Ohio



The Simonds Saw

is built on honor. Every saw which leaves the Simonds factories is inspected and its quality is guaranteed.

Ask your dealer

Simonds Mfg. Co.,

Fitchburg, Mass.
Chicago, Ill.



"Bayonne" — For Porch ROOFS and FLOORS

Because it

- will not rot, leak or peel
- is waterproof—weatherproof
- requires but one coat of paint
- costs less than ordinary roofing
- is easy to lay—and *pays* to lay

BAYONNE ROOF AND DECK CLOTH

Our secret process of treating this special canvas preserves the cotton fibre—the preparation thoroughly penetrates the fabric, preventing the paint from coming in direct contact with the cotton, which rots the canvas.

Send for Booklet N for further information on
Bayonne Roof and Deck Cloth

JOHN BOYLE & COMPANY, Inc.

112-114 Duane St.
70-72 Reade St.

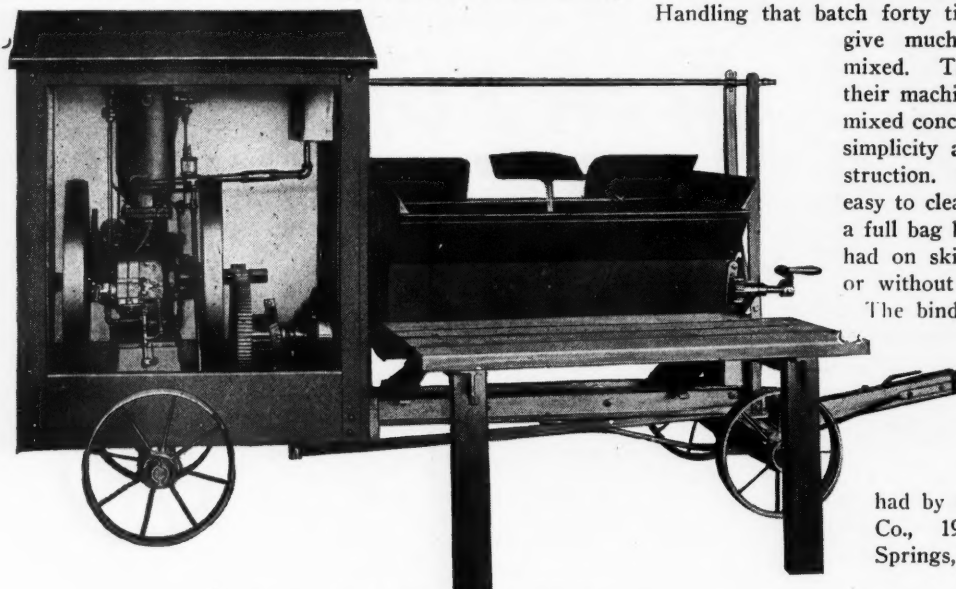
NEW YORK CITY

202-204 Market St.
ST. LOUIS

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

A Promising Investment

One of the most interesting and competent concrete mixers known is the Blystone Batch Mixer. Through the years this machine has been on the market, we have noted a steady



Blystone Batch Mixers for Building Contractors

The paddle arrangement in this machine is a unique feature. Exceptionally strong and capable of sustaining hard usage, they churn the mix over and under, chop into it and throw it from end to end of the mixing drum forty times a minute. Handling that batch forty times a minute certainly doesn't

give much chance of its being poorly mixed. The Blystone people claim for their machines, absolute surety of perfectly mixed concrete, more work in a given time, simplicity and thoroughly guaranteed construction. The Blystone is easy to dump; easy to clean and handles $\frac{1}{4}$ cubic yard or a full bag batch easily. This mixer can be had on skids or on trucks, mounted with or without engine as desired.

The binding guarantee under which the Blystone Mixer is sold ought to convince prospective purchasers of concrete machinery that here is a wonderfully reliable machine.

Instructive catalogs can be had by writing the Blystone Machinery Co., 19 Carpenter St., Cambridge Springs, Pa.



improvement in its working arrangement, the aim of the manufacturers being to produce a concrete mixer of as few working parts as are consistent with thoroughly good mixing, and to simplify the mechanism to such a degree that the average builder will have no trouble in operating it. The Blystone is widely advertised as the "Mixer Without Any Frills."

An interesting book containing one hundred designs of buildings in various parts of the country has been issued by Samuel Cabot, Inc., Boston, Mass. This book will be sent free to builders, who no doubt will obtain from it many good ideas to help them in their building. Incidentally, Cabot's Creosote Stains and Cabot's "Quilt," two good factors in building operations today, are given mention.

A Book of Designs

**You Can
Cash
In**

NATIONAL BANK OF BETTER BUSINESS

Pay to
The Order of *The Man who reads this ad* \$ *Several hundred*
Several hundred
In clear profits and increased reputation in the course of
the year's business as the result of reading *this ad*

Genuine
Bangor
Slate Co.,
Easton Pa.

Please send me particulars about your ability to help me make more money.

Name.....

Address.....

It Will Pay You to Fill This Out, Detach and Mail TODAY

On the popular demand for a fire-resisting, substantial roofing that will last as long as the building lasts, and longer.

The man who builds a prosperous, permanent business is the man whose work is a monument of his workmanship, that will gain him reputation and recommendation from his patrons so that their friends come to him without asking for lower bids elsewhere.

That is the kind of business done by those wide awake carpenters and builders who use our

Genuine Bangor Roofing Slate

It is not an "infant roofing" patented yesterday, but has proved its quality for generations.

Its reputation has been proved by the many attempts to sell other slate under a name as close to ours as the law allows.

Our SPECIAL SERVICE for builders and contractors will enable you to get new customers who are glad to pay a good price for both material and workmanship. Let us prove this to you, without expense or obligation. Send the attached coupon today so you won't forget about it.

Genuine Bangor Slate Co.
Drake Building, EASTON, PA.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

STANLEY'S

Wrought Steel Screen Door Hardware



Each Set Complete with Screws Ready to go on the Screen Door

Owners and Builders alike are pleased with the high quality of the hardware and the convenient way it is packed ready for use.

Butts, pull, spring, hook and eye and screws, all of the highest quality of material and workmanship.

They can be furnished in Japan, Antique Copper, Brass or "Stanley" Sherardized rust-proof finish, the proper finish for outside doors.

Write us for Circular "A". It tells the story.

THE STANLEY WORKS

New York New Britain, Conn., Chicago



THE builder picks out the Irwin Bit. He's sure of good results when he sees the Irwin stamp.

The Irwin Bit, made of one piece of extra high-grade crucible auger-bit steel, and tempered by the secret Irwin Process. The Irwin cannot bend or break where twist and shank unite—the weak spot in ordinary bits. Its hand-filed sharp edges are sure to cut quick and true into the hardest wood, yet will not tear the softest material.

Being the only solid-center-stem bit made in all sizes and styles for every purpose, the Irwin is sure to give lasting satisfaction under every condition—6,500 styles and sizes to cover every need.

The care in making assures perfect service.

Ask your dealer, or write us about it.

THE IRWIN AUGER BIT CO.

Largest in the World

Station I. 18

Wilmington, Ohio

Make Your Machines Do More Work



A Set Bevel Face Shear Tooth Saw for making slotted joint for window sash. Can be used on saw table or shaper. See illustrations 2 and 3

Let us help you increase the efficiency of your Circular Saw Mandrel. We'll send you descriptions of the various cutting tools we make. They can be fitted to any Circular Saw Mandrel and enable you to do more work more thoroughly. No matter what kind of a saw you need, we can supply it. We manufacture

Saws for Every Purpose

—for panel raising, grooving, edging, beveling, slotting window sash and so on through the whole list. Every saw is backed by our guarantee. If any saw proves imperfect, we will make good. You take no chance in ordering special saws from us; we guarantee every saw to do the work that it is ordered for. Write today for illustrated catalog. We make every point clear so you can make no mistake in ordering. Consult us before you buy. Get that catalog now.

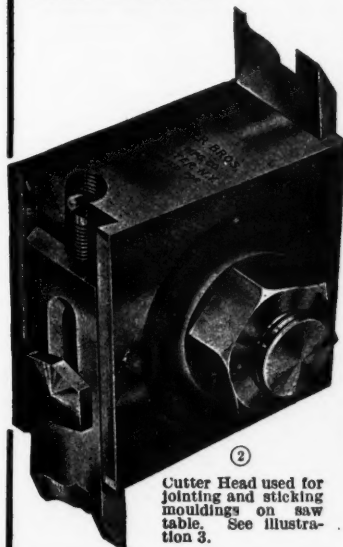
HUTHER BROS. SAW MFG. CO.

1101 University Avenue
ROCHESTER NEW YORK

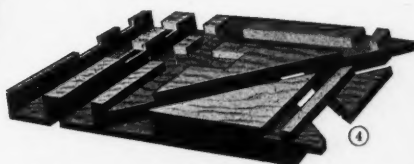
A fine example of
sash work done with
the Bevel Face Shear
Tooth Saw.



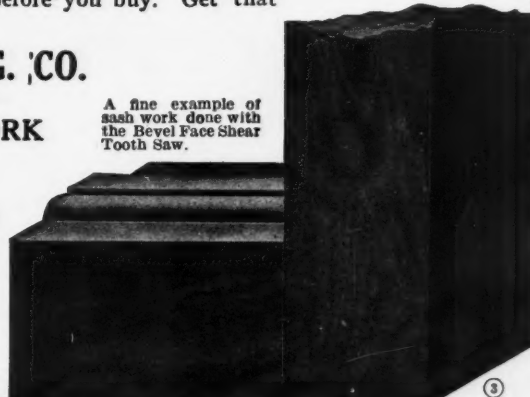
Patent Groover or Dado Head. Can be used on any saw mandrel. Cuts groove shown Fig. 4.



Cutter Head used for jointing and sticking moldings on saw table. See illustration 3.



Perfect groove cut by the groover or dado head (see illustration 5) with or against the grain.



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Clow Cast Iron Specialties



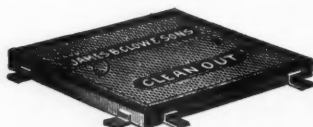
A-2187
Ex. Hy. Cesspool, Long Outlet

Size of top.....In.	12x12	16x16	18x18
Depth.....In.	10	10	10
Size of outlet.....In.	3	4	6
Length of outlet.....In.	10	10	10
Painted, net Each	3.09	3.68	7.16

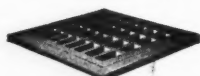


A-2185
Extra Heavy Cesspool

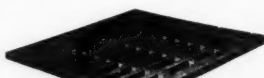
Size of top.....Inches	16x16
Depth.....Inches	10
Size of outlet.....Inches	4
Painted, net.....Each	2.00



A-1700
Cleanout Cover and Frame
Size.....Inches 27x27
Size of frame, outside.....Inches 27 1/4 x 27 1/4
Height of frame.....Inches 4
Price, Standard, net.....Each \$ 9.00
Price, Extra Heavy, net.....Each 18.00



A-2015
Grating with Loose Frame
Size, inches 8x8 10x10 13 1/4 x 13 1/4 18x18
Grate only net.....\$0 .98 1.43 1.80
Grate and frame, net .83 1.28 1.88 2.26



A-2020
Grating
Size, inches.....9x9 13 1/4 x 13 1/4
Price, each, net......75 \$1.13



A-1945
Grating
Concave, diam. 10 in., net, each \$3.38
Convex, diam. 22 1/4 in., net, each \$ 3.75



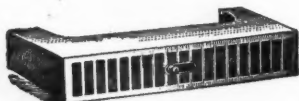
A-1950
Cast-Iron Grating
Diameter.....Inch Each net
Diameter.....14 \$1.88
Diameter.....16 2.06
Diameter.....18 2.25
Diameter.....20 2.43
Diameter.....21 2.81
Diameter.....23 3.19
Diameter.....28 3.56
Diameter.....30 3.94



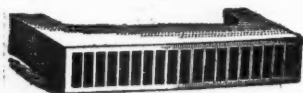
A-1955
Cast Iron Bar Strainer
Diameter . 4 5 6 7 8 9 10
Net, each. .07 .09 .11 .18 .28 .37



A-1710
Cleanout Cover and Frame
Opening, diam., In. 18 24 34
Top, Outside, diam., In. 22 28 38
Price, net, ea \$4.13 \$6.00 \$9.00



A-2200
Air Brick with Sliding Ventilator
Size.....Inches 8 1/2 x 5 17 x 2 1/4 17 x 5
Price, net.....Each 2.59 2.50 5.17



A-2201
Air Brick
Size.....Inches 8 1/2 x 5 17 x 2 1/4 17 x 5
Price, net.....Each 2.20 2.20 4.40



A-1720
Cleanout Cover and Frame
Opening, diameter, inches... 18
Top, outside diam., inches... 22
Base, outside diam., inches... 28
Price, net, each.....\$4.88

Send For Catalogue 39

James B. Clow & Sons

CHICAGO, ILL.

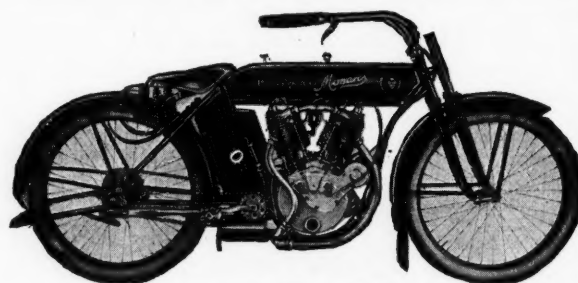
You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

The "Get There" Habit

In our meanderings about this big city, our thoughts are not always "on pleasure bent." More often indeed, we are turning over in our mind the many things we see, to find out if in some way they can be made of service to our great big family of carpenters and builders who depend on us to tell them the latest things connected with the building trades.

We walk down the boulevard (we have no auto), and are amazed at the number of motor driven vehicles gliding along with their human freight. In some, we see the earnest business man; in others the care-free pleasure seekers out for a little joy ride; laughing happy children; all classes from the working man to the society "grande dame." All kinds of cars from the dinky little two passenger affair to the stately, pretentious limousine. There they go rolling along in endless procession, bound here, there, everywhere, nowhere; their occupants taking the cool evening breeze after the sickening swelter of a summer day.

And the motor cycles. Phew! how they are increasing.



Monarch Motor Cycle

Some are ridden by men alone; other men have sweetheart or wife sitting close behind; others have those cute little side cars which are vastly comfortable. Immediately there comes to our mind—transportation for the builder. But in the meantime, the Chicago builders have been doing a little thinking for themselves. Scarcely any job we pass but has one or two motor cycles standing out in front of the building. It's not hard to draw the conclusion that someone working there has the "get there" habit so strong that street cars are not fast enough for him, or else he is overseeing so many jobs that a motor cycle is the only thing that will cover the ground and enable him to get from place to place speedily and without loss of time. If in Chicago where transportation facilities are numerous, the builder finds the motor cycle a convenience, what a greater convenience, we think, should it be to the man in the country.

And so we urge you, if you have never given the matter much thought, to figure out where a motor cycle would come in handy for you, not alone for business but for pleasure also. And you'll want catalogs won't you? and price lists? Surely. Because you'll have to figure out the best machine to buy; one that will if necessary run 365 days in the year, at the smallest expense for upkeep. Then you'll have to decided whether you want a single cylinder, 5 H.P. or a double cylinder, 10 H.P. won't you? and the various other whys and wherefores that go into the making of a "peach" of a motor cycle.

A word in your ear. The Ives Motor Cycle Corporation, Owego, Tioga Co., New York, makes a crackerjack of a machine. Just ask their Sales Department to send you all the dope they can. They'll do it.



Contract For Iron Work

All the ornamental iron work in the Holman office building at Athens, Ga., will be done by the Dow Wire & Iron Works, Louisville, Kentucky.

In
Position**Mr. Mill Man!**

For Your Attention

Write us today. Don't put it off until you forget it, but do it today—*this minute*. We will send you our proposition in detail. We know it will interest you.

Do you want to add a profitable line to your business? We want a responsible Mill Man to manufacture and sell the Bessler Movable Stairway in your territory. There is money in it for the right man.

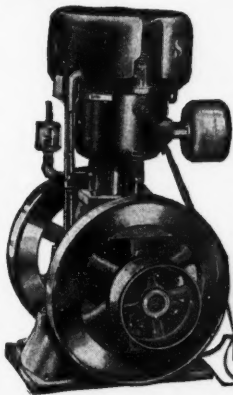
**Are you the
Right
Man?**

What the Stairway Is

Rent is too high to waste a single square foot of floor space. The Bessler Movable Stairway replaces the stationary type in old or new homes, bungalows, stores, hotels, yachts, boats, etc. When in use it is in position shown. When not needed a light touch of the hand swings it into the ceiling, out of the way and sight. Nothing is visible but a neat panel. The demand is stronger every day. You can sell scores in your territory. TRY IT.

The Bessler Movable Stairway Co.

Akron, Ohio

NONE BETTER AT ANY PRICE!!

Get Whitman's Sultan Gas-Kero Engine book before you invest a dollar in any other make!

It will make money and save money for y-o-u

SPECIFY ONE ON YOUR MIXER

Saw, Crusher, Pump or Forge. Get our FREE booklet to-day.

FACTS!

Economy in Fuel
Long Life
Free from Breakage
and
Easy to Operate

The "SULTAN" Vertical
Gasoline or Kerosene

We are now delivering to our customers the most complete, most dependable and most efficient self-contained power plant ever designed—the Sultan Vertical Engine.

This engine is built from beginning to end in our own factory by the highest priced and most expert workmen to be found in any engine factory in the world.

We are producing an engine so good that we back it with the same iron-clad, quality-proving guarantee that we place behind the Whitman Hay Press.

We make the Sultan in all sizes from 2½ h. p. to 10 h. p. We guarantee every engine to generate 10% above the rated power—an engine that will give dependable service at all times in operating any and all kinds of farm machinery.

It is light and easy to move and yet it is the most substantially built and the most reliable engine ever designed for use on the farm.

Our free engine book which we want to send you illustrates and fully describes every part and feature of all the different sizes of Sultan engines and contains a line of argument in favor of the Vertical Engine which is indisputable.

We sell Sultan engines at the most reasonable prices ever quoted for an engine of the same high quality.

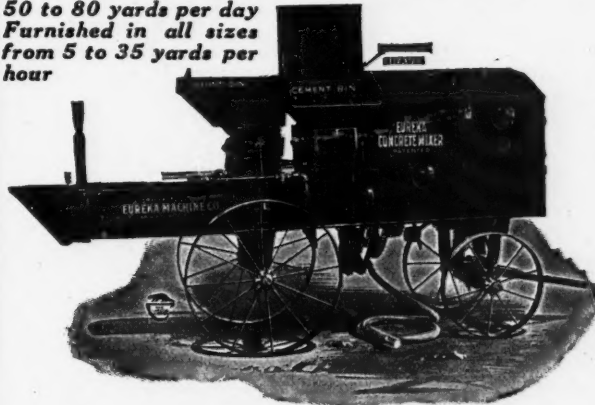
SPECIFY ONE TO-DAY ON THAT MIXER

WHITMAN AGRICULTURAL COMPANY

6921 SOUTH BROADWAY, ST. LOUIS, MO.

**Eureka****Mixer for Building Contractors**

50 to 80 yards per day
Furnished in all sizes
from 5 to 35 yards per
hour



Over 300 Eureka's used in New York City

These Striking Eureka Advantages Compel Attention

It will save one-half in labor over hand mixing.

A thorough uniform mix is guaranteed and full rated capacity.

The average life is six to eight years.

It can be operated by three men or will accommodate a dozen.

Costs about 50 cents a day for gasoline. Built extra strong and can be depended upon for hard, continuous service.

Easy to move and operate. Material shoveled direct into bins—no wheeling.

Only necessary to keep bins supplied with material—measured automatically.

One lever stops and starts mixer—another the feeders.

Equipped with a strictly high-grade engine Bosch magneto if desired.

Eureka mixers are in use everywhere and always satisfactory.

On this satisfaction to the user Eureka prestige has been built.

Ask for catalog No. 30 and names of Eureka users in your territory.

EUREKA MACHINE CO.

85 Handy Street LANSING, MICHIGAN

W. V. JOHNSON & CO., General Eastern Agents
1 Madison Avenue, New York City

Atlanta
Cedar Rapids
Chicago
Cincinnati
Dallas
Dayton

Detroit
Ft. Wayne
Houston
Indianapolis
Kansas City

Minneapolis
Peoria
Pittsburgh
Salt Lake City
Winnipeg

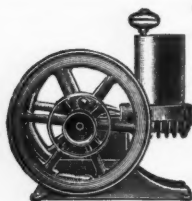
You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

The Stern Floor Scraper

It is said that this practical machine was designed by a carpenter, who having tried many unsatisfactory floor scrapers, decided that he could improve on them all. The price of the average scraper is also something that is a great barrier preventing the man with an ordinary sized pocket book from buying.

The Stern is so simple that a very few operations are necessary to make any desired change. The turn of a screw driver in the slot of the quadrant sets the blades. The blades can be removed by a simple turn of the hand wheel on the blade holder. And let us say right here, and it's mighty important, too, the Stern requires no special blade. Any blade up to $3\frac{1}{2}$ by 7 inches will fit and any hardware store can furnish a blade that can be used in this scraper. Six blades are furnished with each machine, but in case you need additional ones, it is nice to know that you won't have to send away for them and have work held up in the meantime. By an adjustment of the weights, any hard or soft floor can be finished equally well. The Stern Floor Scraper is easy to move and by changing the position of the handle it is possible to scrape floors in a very narrow room, hallways, closets, etc.

If you are in search of a moderately priced floor scraper and want assurance that the work it does is right, get in touch with the Stern Manufacturing Company, Lancaster, Pa., and have them send you circulars and prices.



The Cheapest Power Known

Right design, right materials, best results, runs on kerosene or gasoline for power. Write for facts and figures.

CANFIELD ENGINE WORKS

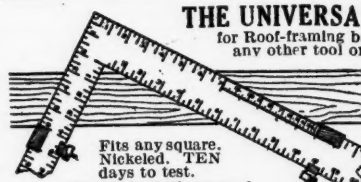
6-16 Abbott St - Binghamton, N. Y.

How Long Do Your Saws "Live"

The life of the saw is something that ought to be close to the interests of the man who uses such a tool. Poor care and improper filing have put many saws past the useful stage long before their time. We'll grant, if you like, that you are a good saw filer and yet it would be a super-human task to file each tooth of a saw with the same exactitude. A little more pressure here, an extra rasp there will throw the thing out of balance. And then too, if there are many saws to sharpen, it's quite some job.

The Miotke Saw Sharpener responds to the test bravely. Here is a machine that with the utmost precision files eighty teeth per minute; every tooth, every space between the teeth is each of absolutely uniform size, angle and pitch. Regardless of the size of the saw, the Miotke Sharpener handles it all right and the result is claimed to be always a perfectly filed saw. It is a simple machine to operate; a boy can do it. In connection with this sharpener is a gummer which automatically punches out or repunches the teeth of a saw to a fixed and uniform size. Insert the saw and turn the handle of the sharpener; the saw is filed its entire length; automatically the sharpening arrangement reverses and files the teeth the other way; and the job is finished in five minutes.

Further descriptions which dwell with more detail on the advantages of the Miotke Saw Sharpener to the builder can be obtained by sending a postal card to Joseph Miotke, 259 Lake St., Milwaukee, Wisconsin.



THE UNIVERSAL PITCH GAUGE holds its supremacy for roof-framing because it marks more framing than any other tool or method, and is most easily used by the unskilled. To quickly enlarge its already wide sale—in 32 states, Canada and Great Britain—the price is reduced to just \$1.00—prepaid. Gauge marks many pitches—dozens—any one in 5 minutes. And in a few seconds any one of these—hip-backing, both bevels on sheathing, plancher, fascia and purline; 1000 irregular hips; octagon hips and jacks; hopper cuts, &c.

JOHN PARKHILL, Rochester, Minn.



Those Barns Will Need Weather Stripping

The Schouler Patent Weather Strip and Guide is the only practical weather protection for barn, garage or factory sliding doors. Can be used on any type of sliding door—easily applied. It is made of heavy metal and wears forever.

Get our catalog and other details.

Schouler Cement Construction Co., 144 Frelinghuysen Ave., Newark, N. J.

ON-SER-TEX
CANVAS
ROOFING

HAS BEEN TRIED AND CONVICTED ON TWO COUNTS

- 1st—Of producing results as promised.
- 2nd—Of being the best canvas roofing on the market.

Its neat appearance; satisfactory service; low initial cost and extreme durability—warrant the Home Builders' close investigation.

Allow us to put our organization at your disposal by co-operating with you.

CON-SER-TEX has no equal as a covering for Porch Roofs, Piazza Floors, Sleeping Balconies and all places where a lasting fabric is desired.

Chicago Distributor
Geo. B. Carpenter & Co.
Wells & Michigan Sts.

William L. Barrell Company
8 Thomas Street
New York

California Distributor
Waterhouse & Price Co.
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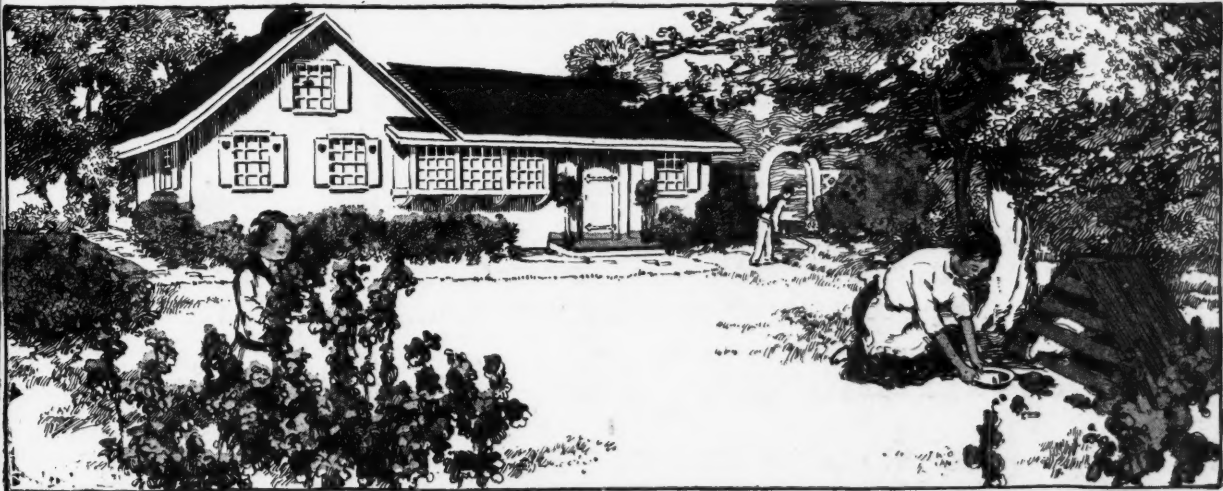
AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

WE ANNOUNCE the Addition—beginning This Issue—of a New Group of Departments for Home Builders; for the Man and his Good Wife who are planning their New Home and are eager for up-to-date Home-making ideas and dependable advice. Our Contractor and Builder Readers will find this new section just the thing to Interest their Prospects. See page 39 for this New Feature.

HOME BUILDERS SECTION





A LOT OF WORK FOR FIFTY CENTS

He saved (?) fifty cents when he bought his Saw and then he lost Ten Dollars worth of time and Fifty Dollars worth of effort in trying to make it go.

Saws have gone ahead—like some other tools. The best mechanics of to-day can now use *improved* Saws that have the right kind of “go” to them.

Don't be blind to your own welfare. There is only one way to get the best—the most improved Saws, and that way is to use the Genuine

ATKINS *Silver Steel* SAWS

They are the most scientifically made. The SILVER STEEL is as fine as razor steel. It takes the sharpest—keenest edge you ever saw and holds it longest.

Right now—this Spring—is the best time to get started-right on Saws. Why wait longer? Get a genuine ATKINS SILVER STEEL SAW and get results.

Go to your regular dealer and demand an ATKINS, with our name on the blade. He has it—or can get it for you. Whether he sells it or not—make him get it for you. He'll do it if you insist. Get the very best kind, with the words “SILVER STEEL” on the blade, and then you will have it all over the other fellow with his old fashioned Saw. You'll work faster and—mind this—easier—a whole lot easier than he can—and you'll do better work, because your Saw will be up to the minute.

You owe it to yourself to use the finest Saws, and the only way that you can surely do this is by using the Genuine ATKINS SILVER STEEL, the “Finest on Earth”.

OUR FREE OFFER

We are still compiling the names of high class mechanics and if you will send us your name and address with ten cents to pay postage, we'll mail you a free carpenters nail apron, and in the pocket you will find a whole lot of useful information and perhaps something else that you would like to have.

Write to E. C. ATKINS & CO., Inc., The Silver Steel Saw People

Or if you prefer, you can write to E. C. ATKINS & CO., at Atlanta, Ga., Chicago, Ill., Memphis, Tenn., New Orleans, La., Minneapolis, Minn., New York City, Portland, Oregon, San Francisco, Calif., Seattle, Wash., Hamilton, Ont., Vancouver, B. C.

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